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ADMINISTRATION SYSTEM AND DOMAIN MODEL**

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THE STUDY OF CUSTOMARY RIGHTS IN MALAYSIAN LAND
ADMINISTRATION SYSTEM AND DOMAIN MODEL

RICHARD NYARU ANAK JAWA

A thesis submitted in fulfilment of the
Requirements for the award of the degree of
Bachelor of Engineering (Geomatic)

Faculty of Geoinformation and Real Estate
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JUNE 2015

I declare that this thesis is the result of my own study except as cited in references.
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To my beloved family

To my beloved lecturers

To my beloved friends

Thank you for all of your supports

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ABSTRACT

The Land Administration Domain Model (LADM) is modeled to propose a suitable Land Administration Domain Model for non-spatial and spatial components for customary right in Malaysia (Melaka and Sarawak). Land administration Domain Model (LADM) is modeled to create a standardized information services in an international context where land administration domain semantics need to be shared between regions or countries as a way to enable necessary translations. LADM is designed in such a way that the transparency through the inclusion of source documents and the inclusion of the names of persons with roles and responsibilities in the maintenance processes into the data model. The designed model integrates both spatial and non-spatial information, support 3D Cadastres and both formal and informal rights, restrictions and responsibilities. This research is on the non-spatial and spatial customary right domain model only. Besides that, this research is also focused on the comparisons between the customary rights of Melaka and Sarawak. For the comparisons of Melaka and Sarawak Customary Rights there are many similarities but the way each of the state implemented the customary rights is different as it is involving most of the people of the state. The main land code that's used in Melaka is the National Land Code (Penang & Malacca Titles) 1963 (Act 518) and Sarawak's land code is Sarawak Land Code Chapter 81, 1958. The comparisons are divided into three items which are tenure, registration and demarcations. Both of the states have all of the items. As for the non-spatial and spatial domain model for Malaysian Customary Rights, both of the non-spatial and spatial are connected together. This is proved in the land laws which are used in both Melaka and Sarawak that the customary land is needed to be demarcated.

ABSTRAK

Land Administration Domain Model (LADM) dimodelkan untuk mencadangkan Domain Model yang sesuai bagi komponen bukan spatial dan spatial untuk hak adat di Malaysia (Melaka dan Sarawak). *Land Administration Domain Model (LADM)* dimodelkan untuk mewujudkan perkhidmatan maklumat yang seragam dalam konteks antarabangsa di mana sematik LADM perlu dikongsi antara negeri atau negara sebagai satu cara untuk membolehkan terjemahan. LADM direka melalui kemasukan dokumen sumber dan nama orang yang berperanan dan bertanggungjawab dalam proses penyelenggaraan model data. Model yang direka mengintegrasikan kedua-dua maklumat spatial dan bukan spatial, menyokong 3D kadaster dan hak, sekatan dan tanggungjawab. Kajian ini adalah lebih tertumpu kepada model bukan spatial dan spatial dari segi hak adat di Melaka dan Sarawak sahaja. Selain itu, kajian ini juga memberi tumpuan kepada perbandingan antara hak-hak adat Melaka dan Sarawak. Bagi perbandingan hak adat Melaka dan Sarawak, terdapat banyak persamaan tetapi cara setiap negeri melaksanakan hak adat tersebut adalah berbeza kerana ia melibatkan sebahagian besar rakyat negeri itu. Kanun Tanah digunakan di Melaka ialah Kanun Tanah Negara (Hakmilik Pulau Pinang dan Melaka) 1963 (Akta 518) dan bagi Sarawak pula ialah Kanun Tanah Sarawak Chap 81, 1958. Perbandingan dibahagikan kepada tiga perkara iaitu pemegangan tanah, pendaftaran dan penandaan sempadan. Kedua-dua negeri ini mempunyai item yang sama. Bagi domain model bukan spatial dan spatial untuk hak adat Malaysia, kedua-dua model bukan spatial dan spatial dihubungkan bersama. Ini dibuktikan dalam undang-undang tanah yang digunakan dalam kedua-dua Melaka dan Sarawak bahawa tanah adat yang perlu ditandakan sempadan.

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CHAPTER 1

INTRODUCTION

1.0 Background of the Study

Land Administration Systems (LAS) provide the infrastructure for implementation of land policies and land management strategies in support of sustainable development. The infrastructure includes institutional arrangements, legal framework, processes, standards, land information, management and dissemination systems and the technologies required to support allocation, land markets, valuation and control of use and development of interests in land. Generally, there are four components in land administration that are land registration, land valuation, land use planning and cadastral survey and mapping. In Malaysia, the functions of land administration are organised by the Department of Survey and Mapping Malaysia (JUPEM), State Land and Mines Office (PTG)/District Land Office (PTD) and State Local Authority. These departments are responsible for survey and mapping and land registration respectively (Tan Liat Choon, 2013).

The National Land Code 1965 (ACT 56) is only authorized in Peninsular Malaysia and Federal territory. Both Sabah and Sarawak have implemented their own Land Ordinance. Prior to Malaysian Customary Rights, the states that still

implemented these rights are namely Melaka, Negeri Sembilan, Sabah and Sarawak, which are Malacca Customary Land, *Tanah Adat Negeri Sembilan*, Native Lands and Native Customary Land for Sabah and Sarawak respectively. Customary rights are acquired by custom and own by the natives (SUHAKAM, 2013). Each of these customary rights is differ from one another in terms of land administration systems and land management systems due to differences in their histories and origins.

The majority of the indigenous peoples of Malaysia still live in remote areas, although more and more now live in the periphery of the urban areas. Many survive by hunting and gathering, fishing, swidden farming, arboriculture, and by trading forest products. There are 28 indigenous groups making up 71.2 per cent of the population of Sarawak; 13 *Orang Asli* groups in Peninsular Malaysia numbering 178,197 (2010 estimate) or constituting 0.79% of the population of the Peninsula. In Sabah, the 39 ethnic groups apparently make up 61.22 per cent of the State's total population. During the Consultations in five districts in Sabah, 407 statements were recorded, of which 24 were considered outside the scope of the Inquiry. For the purpose of the Public Hearings, the statements were categorised and 33 representative cases were selected. It should be noted that since the statements were mainly from the perspective of the communities, the categorisation can only be regarded as a general guide for the purpose of selecting cases during the Public Hearing. Many of these cases also involved more than one issue as stated by SUHAKAM (2013)

The development of Malaysian LADM country profile is based on data sources from Department of Survey and Mapping (DSMM) and Land Office. Based on earlier work, Abdul Rahman, Tan Liat Choon and Amalina Zulkifli have taken initial steps towards a Malaysian country profile. Malaysian country profile is covering both the spatial and administrative data modelling. Land Administration Domain Model (LADM) is an important model where it provides the facilities to create standardized information services in an international context. The land administration domain semantics have to be shared between regions or countries in order to enable necessary translations. There are many countries which have

proposed their own country profiles based on LADM. The countries mentioned are Poland, Republic of Korea, Netherlands and Croatia. Malaysia is one of the potential candidates towards LADM-based country profile. The Malaysian LADM country profile can be used to combine information from Department of Survey and Mapping Malaysia and the Land Offices because these systems are not fully integrated. LADM can provide a better support for the various land policies and related applications. LADM is also designed in such a way that transparency can be supported via the inclusion of source documents and the inclusion of the names of the persons with roles and responsibilities in maintenance processes into the data model.

This study will focus on the differences of land administration system in term of customary rights used in Melaka and Sarawak. The differences in land administration system and practices as well as structure of organization will also include in this study to state the final purpose of this study. Analysis of this study will define the differences of land administration system being implemented in each of the states mentioned. An overview of the land administration system will be included based on comparisons. This study is to compare the systems such as land tenure, land registration and land use of customary rights in Malaysian land administration system and give some recommendations for better improvements.

1.1 Problem Statement

Since the establishment of the Human Rights Commission of Malaysia (SUHAKAM), many various complaints and memorandums from indigenous community alleging various forms of human rights violations were received. According to SUHAKAM (2013), among the numerous complaints between 2002 and 2010, most of them are related to customary rights to land, which have not been resolved. These complaints ranging from allegations of encroachment and

dispossession of land; land included into forest or park reserves; overlapping claims and slows processing of request for the issuing of native titles or community reserves.

According to Tan Sri Hasmy Agam, Chairman of the Human Rights Commission of Malaysia stated that a large part of the problem arises from a lack of recognition by the authorities of the concept of customary land of the indigenous peoples, or what constitutes customary land, when much of this land has not been, or is yet to be registered as customary land with the relevant government departments due to the ignorance or misunderstanding on the part of the community on the processes involved. In other instances, this is due to inefficiency on the part of the government agencies concerned which failed to do the needful in spite of years of processing these land ownership claims, much to the chagrin of the natives.

According to SUHAKAM (2013), indigenous people of Malaysia have a close relationship to their lands, territories and resources as these are important to them as part of their spiritual and cultural life and also form their identity. Thus, the recognition of the promotion and protection of rights over their customary lands and resources are significant for their development and cultural survival. Indigenous communities have their own customs related to the use and conservations of lands, territories and resources.

The Aboriginal Peoples Act is the only law that is being used to the *Orang Asli*. The Act regards the *Orang Asli* as a homogenous people, subject to control and administration by the State, rather than treating them as autonomous social units. This is particularly so in its treatment of the *Orang Asli's* ownership and tenure of their customary lands. The traditional interpretation of the Act has been that, while the *Orang Asli* may reside in their traditional areas or reserves, this is not a permanent right, but rather one that is no more than that of a *tenant-at-will* – that is, at the will of the State authority as described by SUHAKAM (2013).

According to SUHAKAM (2013), the Sarawak Land Code has made some challenges for native communities seeking to secure their native customary rights over lands. In general, these challenges associate to the statute's failure to recognise traditional forms of occupation according to native customary laws and the State's broad authority to cancel Native Customary Rights (NCR).

Furthermore, the Malaysian customary rights are unsynchronized due to the distinct land policies in each state mentioned earlier. In Malaysia, Melaka has its own customary rights whereas Sarawak produced its own Land Ordinance in governed the customary rights existed. The unique distinctions between each state customary right are the main components of this study.

There are some issues on land that prevail in Malaysia. The first issue is a public power over land which involves planning, development control, compulsory, purchase, public development and land taxation. Secondly, the land market includes legal and fiscal frameworks for commercial transactions such as buying, selling, leasing and mortgaging. The third issue is the institutional structures that exist to control the use of land and this includes local and central public authorities and the general regulatory framework for decision making in the field of urban land. The success of the national development policies and strategies in Malaysia will depend on complementary land legislation, supporting land policy and physical planning framework.

In order to analyse the Malaysian Customary Rights in more detail, Land Administration Domain Model (LADM) need to be created first. Domain model is used to cover basic information related to components of land administration. These components concern with party related data, data on the responsibilities, restrictions and rights (RRRs) and the basic administrative units where RRRs are apply to data on spatial units and surveying and topology. The data sets in those components are represented in Unified Modelling Language (UML) packages and class diagrams. All data in a land administration are supposed to be documented in authentic source

documents. These documents are the basis for building up a trusted and reliable land administration system as stated in ISO 19152 (2012).

1.2 Objectives of the Study

The main objective of this study is to study and understand the differences between different customary rights that are practiced in Melaka and Sarawak. Additionally, this study is also provides basic information on land administration domain model of Malaysian customary rights. The specific objectives of this study are as follows:

- i. To compare the differences of the customary rights between Melaka and Sarawak.
- ii. To propose a suitable spatial and non-spatial customary rights for Land Administration Domain Model in Malaysia (Melaka and Sarawak).

1.3 Hypothesis of the Study

The hypotheses of the study are as follows:

- i. Comparisons between each state customary right can enhance the Malaysian land administration system and to understand Malaysian customary rights.
- ii. Land Administration Domain Model (LADM) serves its purpose to propose an efficient land administration system in terms of Malaysian customary rights and provide better understandings about customary rights in general view.

1.4 Scope of the Study

This research focuses on customary rights in Malaysian land administration system and domain model. In order to have a good land administration domain model, sufficient authentic document sources is needed to provide valid and improbable information.

Information and data were collected through comparison of data, findings, references and research from articles and thesis from the library, District Land Office and articles from internet based on valid information. In Melaka, National Land Code (Penang & Malacca Titles) Act 1963 section 94 until 109c mentioned Malacca Customary Land Register concerning about customary right. A Sarawak customary right is mentioned in Sarawak Land Code 1958 Chap. 81 and refers as Native Customary Rights (NCR). These four states have a lot differences in term of customary rights, definitions, land administration and management system and structure of the organisation.

Information and data obtained were subjected to have many distinctions between each of the customary rights implemented in each state. The National Land Code 1965 (Act 56) is still can be authorized in Melaka regarding the customary right but the priority is given to state local customary right. In Sarawak, Sarawak Land Ordinance respectively are being authorized regarding the customary right without refer to the National Land Code 1965 (Act 56). The data and information obtained will be modelled into a Domain Model to analyse the system structures and organisations.

1.5 Significance of the Study

Problems of Malaysian customary rights in native lands are occurring by each day. Thus, this research of customary rights in Malaysian land administration system and domain model is important in order to create a better improvement of the quality of Malaysian customary rights. A high quality domain model has to be modelled in terms of the components of the customary rights administration and management to increase the customary right administration system efficiency. Apart from that, this study can help to provide a good attribute for a better Malaysian Country profile in terms of non-spatial and spatial customary rights. The results will be presented in Model Driven Architecture (MDA) and unified modelling language. Analysis of the system will be made from the presentation of information and data. Through the analysis obtained, proposes and recommendations will be made accordingly to each state and customary rights.

CHAPTER 2

LITERATURE REVIEW

2.0 Introduction

This chapter presents the overview about global land administration system and Malaysian land administration system. Brief overview and description about Malaysian country profile and Land Administration Domain Model (LADM) are included also in this chapter. Information about Malaysian customary rights for Melaka and Sarawak are shown to provide a general idea of the customary rights that are implemented in the states mentioned above. Some description about Unified Modelling Language is also included as this standard language is the main mechanism of the Land Administration Domain Model.

2.1 Land Administration

United Nations Economic Commission for Europe (1996) states that the process of determining, recording, and disseminating information about the tenure, value and use of land when implementing about the tenure, value and use of land when implementing land management policies. It is considered to include land registration, cadastral surveying and mapping, legal and multipurpose cadastre and land information system.

According to Dale and McLaughlin (1999) states that the land administration function may be divided into four components which are juridical component, regulatory component, fiscal component and information management component. The juridical component places greatest importance on the holding and registration of rights in land while the regulatory component is mostly regarded with the development and use of land. The fiscal component focuses on the economic utility of the land and the information management component is integral to all three components described above. The juridical cadastre underpins land registration. This includes zoning and other information system facilitates planning and enforcement of regulations and other information systems facilitate planning and enforcement of regulations. The fiscal cadastre supports the valuation and taxation (Dale and McLaughlin, 1999). Land administration is concerned with three principles and interdependent commodities which are the ownership, value and use of land. Ownership relates to the possession of rights in land and value normally relates to market value whereas use relates with the rights to use and profit from the land (Tan Liat Choon, 2013).

2.1.1 Land Administration System

Land Administration Systems (LAS) are important infrastructures that smooth the implementation of land policies in both developed and developing countries and concerned with social, legal, economic and technical framework within which land managers and administrators must manage. These systems support dynamic land markets but at the same time concerned with the administration of land as a natural resource. This is to ensure its sustainable development. The United Nations Economic Commission for Europe (1996) defines land administration as the processes of determining, recording and disseminating information about the tenure, value and use of land when implementing land management policies. It is considered to include land registration, cadastral surveying and mapping, fiscal, legal and multi-purpose cadastres and land information systems.

According to Enemark (2009), there are four land administration functions are land tenure, land value, land use and land development and each of them are different in their professional focus. Normally these are undertaken by a combination of professions. In addition, the actual process of land valuation and taxation and the actual land use planning processes are normally not considered to be part of the land administration activities. However, modern land administration system as designed provides a fundamental infrastructure and supports the integration of the four functions:

- i. **Land tenure:** the processes and institutions related to securing access to land and inventing commodities in land, and their allocation, recording and security; cadastral mapping and legal surveys to determine parcel boundaries; creating new properties or altering existing properties; the transfer of property or use from one party to another through sale, lease or credit security; and the management and adjudication of doubts and disputes regarding land rights and parcel boundaries.
- ii. **Land value:** the processes and institutions related to assessment of the value of land and properties; the calculation and gathering of revenues through

taxation; and the management and adjudication of land valuation and taxation disputes.

- iii. **Land use:** the processes and institutions related to control of land use through adoption of planning policies and land use regulations at national, regional and local levels; the enforcement of land use regulations; and the management and adjudication of land use conflicts.
- iv. **Land development:** the processes and institutions related to building of new physical infrastructure and utilities; the implementation of construction planning; public acquisition of land; expropriation; change of land use through granting of planning permissions, and building and land use permits; and the distribution of development costs.

Consequently, all the functions are interrelated. The interrelations come into view through the fact that the actual conceptual, economic and physical uses of land and properties affect land values. Land values are also affected by the potential future use of land decided through zoning, land use planning regulations and permit granting processes. The determination and regulation of land development depend on the land use planning and policies.

2.2 Rights

According to Dale and McLaughlin (1988), the term 'land ownership' is commonly used in land management to define the rights to use land that can be owned. Such rights may be held through local customs or the formal processes of the law. In order to prove who owns the rights to any particular area of land, it is necessary to investigate the entitlement where the title is the evidence of a person's rights to property. However, the title does not necessarily imply occupation or use (Dale and McLaughlin, 1999)

Article 17 of the Universal Declaration of Human Rights recognizes the rights of everyone to own property either alone or in association with others, and that no one should be arbitrarily deprived of their property. In addition, the right to an adequate standard of living and security (Article 25) entails a universal right to adequate shelter. Article 11 of the International Covenant on Economic, Social & Cultural Rights recognizes a universal right to housing and to continuous improvement of living conditions. Articles 1 and 2 of the UN Declaration on the Rights of Indigenous Peoples (“UNDRIP”) states that indigenous peoples have the right to enjoy all human rights and freedoms from discrimination, not only as individuals but also as a collective. Indigenous collective rights stem from the way indigenous peoples organise themselves as a group or community as stated by (SUHAKAM, 2013).

All human rights apply to women and men in an equally manner. The Convention on the Elimination of All Forms of Discrimination against Women (CEDAW) stated that women, and both spouses, shall have equal rights in respect of the ownership, acquisition, management, administration, enjoyment and disposition of property administer property (Articles 15 and 16) as stated by SUHAKAM (2013).

2.2.1 Customary Rights

Customary tenure is a set of rules that govern community allocation, use, access, and transfer of land and other natural resources. The term customary tenure presents the idea of traditional rights to land and other natural resources the tenure usually associated with indigenous communities and administered in accordance with their customs, as opposed to statutory tenure usually introduced during the colonial period (FAO, 2002). While we tend to associate customary tenure with age-old practices, we are reminded that how far these are rooted in the practices of past generations is hardly relevant; they stem from and are sustained by the living

community of today. The singular shared attribute of indigenous tenure regimes around the world today (and adhered to by no less than two billion people) is that they are community-based property systems (Alden, 2008). Customary tenure reflects the particular needs of the local community, often leading to significant complexity. Customary tenure systems are inherently unique to the locality in which they operate; thus they are difficult to characterize by generalities. The following characteristics are found in many, but certainly not all, customary tenure systems. In so far as customary systems respond to the needs of particular localities and user groups, they frequently entail complexities not found in statutory systems that address more general principles and concerns. They may, as noted below, address such issues as seasonal variation in resource supply and demand, may respond to specific needs of particular socioeconomic groups in the community, and may craft quite complicated arrangements to deal with competing resource user groups.

2.3 Land Administration Domain Model (LADM)

In the beginning of 2008, FIG submitted a proposal to develop an International Standard for the Land Administration (LA) domain to the ISO/TC 211 on Geographic Information of the International Organization for Standardization. The proposal received a positive vote from the TC 211 member countries on May 2, 2008, and a project team started to work on the development of the standard. Within Technical Committee 211, many issues and comments have been discussed during several meetings (in respectively May 2008, October 2008, December 2008, May 2009 and November 2009), held with a project team composed of 21 delegates from 17 countries. A significant contribution to the development of the standard has been provided by the research communities of the Faculty of Geo-Information Science and Earth Observation of the University of Twente (ITC) and Delft University of Technology, the Netherlands (ISO 19152, 2012).

The standard allows for the implementation of a rich functionality over distributed environment. Some of the offered options still have to be discovered, for example during pilots. A LADM community is developing. So far workshops have been organised in 2003, Enschede, the Netherlands, in 2004, in Bamberg, Germany, in 2009, Quebec City, Canada and in 2012 in Rotterdam, the Netherlands. The LADM 2013 was in September 2013 in Malaysia (ISO 19152, 2012).

Land administration Domain Model (LADM) is modelled to create a standardized information services in an international context where land administration domain semantics need to be shared between regions or countries as way to enable necessary translations. LADM is designed in such a way that the transparency through the inclusion of source documents and the inclusion of the names of persons with roles and responsibilities in the maintenance processes into the data model. This model integrates both spatial and non-spatial information, support 3D Cadastres and both formal and informal rights, restrictions and responsibilities. Many countries have proposed their own country profile based on Land Administration Domain Model such as Poland, Republic of Korea, Netherland and Croatia. As stated in the International Organization for Standardization (ISO 19152, 2012), the two important goals of LADM are:

- i. To give a foundation for the refinement and development of effective land administration system by using a Model Driven Architecture (MDA).
- ii. To involve parties within one country and different countries to communicate based on the same terminologies which are used by the model.

The LADM is an international standard data model being developed by the International Standardization Organisation (ISO) under Technical Committee 211 for Geographic information/Geomatics. The LADM is a specific domain model dealing with that part of land administration which deals with rights, restrictions and responsibilities (RRRs) and their geospatial (geometric) information component. The aim of this spatial domain model is to improve communication through introducing standard concepts or vocabulary in the land administration domain. This is aimed at improving interoperability between cadastral or related information systems, thus

improving exchange of land information between local, national and international organisations (both private and public) and information society at large (ISO 19152, 2012).

By refereeing to ISO 19152 (2012), the main class of the party package of LADM is class LA_Party with its specialisation LA_Group Party. There is an optional association class LA_Party-Member. A Party is a person or organisation that plays a role in a rights transaction. An organisation can be a company, a municipality, the state, or a church community. A ‘group party’ is any number of parties, forming together a distinct entity. A ‘party member’ is a party registered and identified as a constituent of a group party. This allows documentation of information to membership.

Secondly, the administrative package concerns about the abstract class LA_RRR (LA_Right, LA_Restriction and LA_Responsibility), and class LA_BAUnit (Basic Administrative Unit). A ‘right’ is an action, activity or class of actions that a system participant may perform on or using an associated resource. A right can be an informal use right. Rights may be overlapping or may be in disagreement. A ‘restriction’ is a formal or informal entitlement to refrain from doing something. A ‘responsibility’ is a formal or informal obligation to do something. Basic administrative unit is an administrative entity consisting of zero or more spatial units (parcels) against which one or more unique and homogeneous rights, responsibilities or restrictions are associated to the whole entity as included in the Land Administration System. A ‘basic administrative unit’ may play the role of a ‘party’ because it may hold a right of easement over another, usually neighbouring, spatial unit.

The spatial unit package concerns the classes LA_SpatialUnit, LA_SpatialUnitGroup, LA_Level, LA_LegalSpaceNetwork, LA_LegalSpace-BuildingUnit and LA_Required- RelationshipSpatialUnit. A ‘spatial unit’ can be represented as a text (“from this tree to that river”), a point (or multi-point), a line (or

multi-line), representing a single area (or multiple areas) of land (or water) or, more specifically, a single volume of space (or multiple volumes of space). Single areas are the general case and multiple areas the exception. Spatial units are structured in a way to support the creation and management of basic administrative units. A ‘spatial unit group’ is a group of spatial units. The Spatial Unit Package has one Surveying and Spatial Representation Sub-package with classes such as LA_SpatialSource, LA_Point, LA_BoundaryFaceString and LA_BoundaryFace. Points can be acquired in the field by classical surveys or with images. A survey is documented with spatial sources. A set of measurements with observations of points, is an attribute of LA_SpatialSource. The individual points are instances of class LA_Point, which is associated to LA_SpatialSource. 2D and 3D representations of spatial units use boundary face string and boundary faces respectively. Co-ordinates themselves either come from points or are captured as linear geometry.

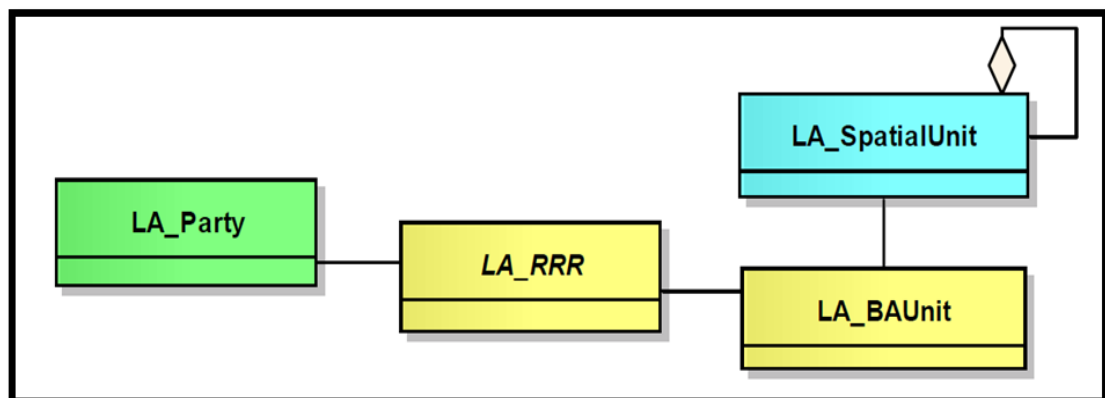


Figure 2.1: Core Classes of LADM

2.3.1 Unified Modelling Language

The Object Management Group (OMG) released the Unified Modelling Language (UML) in 1997. One of the purposes of UML was to provide the development community with a stable and common design language that could be used to develop and build computer applications such as a standard language for object-oriented software at a conceptual level and Geographical Information System application. UML brought forth a unified standard modelling notation, multiplicity and visibility. By using UML, the system structure and design plan can be read and disseminated. This language can be also be used to model the structure schema of a data model at the conceptual level. There are several types of diagrams that can increase the facility of understanding an application as the diagrams provide a good introduction to the language and principle behind its use.

2.3.2 UML Diagrams

There are many types of UML diagrams. The most useful and standard UML diagrams used in core cadastral domain are the class diagram and object diagram. Class diagram shows classes and the relationship between them and the object diagrams shows the system at a particular point in time. The diagrams mentioned are used to describe the static structure of a system. Both of these diagrams show the elements of the system and the structural relationship. In most cases, the class diagram of UML is used to describe the care of the cadastral domain model and other cadastre and land administration models. For other usage, case diagram is used to shows actors such as people or other users of the system. For example the usage of case diagram, the scenarios when they use the system and their relationship.

2.3.3 Class Diagrams

The class diagram shows the building blocks of any object-orientated system. Class diagrams shows a static view of the model, or part of the model, describing what attributes and behaviour it has rather than detailing the methods for achieving operations. Class diagrams are most useful in illustrating relationships between classes and interfaces. Generalizations, aggregations, and associations are all valuable in reflecting inheritance, composition or usage, and connections respectively.

The diagram below illustrates aggregation relationships between classes. The lighter aggregation indicates that the class "Account" uses Address Book, but does not necessarily contain an instance of it. The strong, composite aggregations by the other connectors indicate ownership or containment of the source classes by the target classes, for example Contact and Contact Group values will be contained in Address Book.

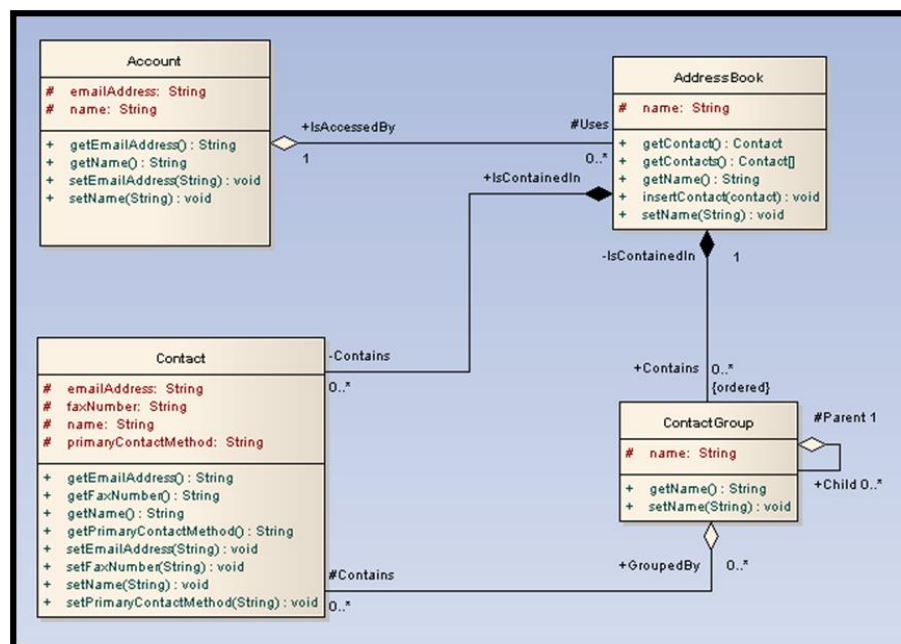


Figure 2.2: Class Diagrams

2.3.4 Classes

A class is an element that defines the attributes and behaviours that an object is able to generate. The behaviour is described by the possible messages the class is able to understand, along with operations that are appropriate for each message. Classes may also have definitions of constraints, tagged values and stereotypes.

2.3.5 Class Notation

Classes are represented by rectangles which show the name of the class and optionally the name of the operations and attributes. Compartments are used to divide the class name, attributes and operations.

In the diagram below the class contains the class name in the topmost compartment, the next compartment details the attributes, with the "center" attribute showing initial values. The final compartment shows the operations `setWidth`, `setLength` and `setPosition` and their parameters. The notation that precedes the attribute, or operation name, indicates the visibility of the element: if the `+` symbol is used, the attribute, or operation, has a public level of visibility; if a `-` symbol is used, the attribute, or operation, is private. In addition the `#` symbol allows an operation, or attribute, to be defined as protected, while the `~` symbol indicates package visibility.

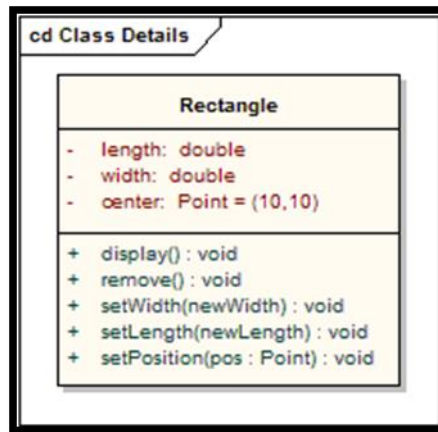


Figure 2.3: Class Notations

2.3.6 Object Diagrams

An object diagram may be considered a special case of a class diagram. Object diagrams use a subset of the elements of a class diagram in order to emphasize the relationship between instances of classes at some point in time. They are useful in understanding class diagrams. They do not show anything architecturally different to class diagrams, but reflect multiplicity and roles.

2.3.7 Class and Object Elements

The following diagram shows the differences in appearance between a class element and an object element. Note that the class element consists of three parts, being divided into name, attribute and operation compartments; by default, object elements do not have compartments. The display of names is also different. The

object names are underlined and may show the name of the classifier from which the object is instantiated.

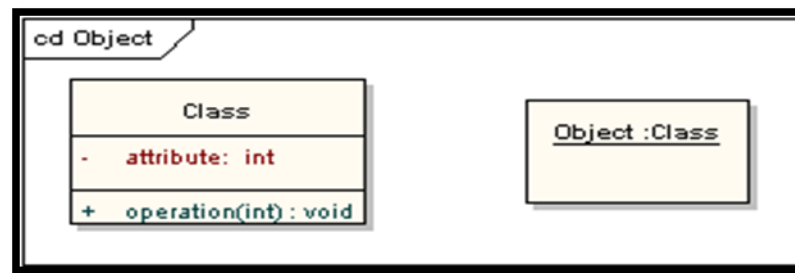


Figure 2.4: Class and Object Elements

2.3.8 Run Time State

A classifier element can have any number of attributes and operations. These are not shown in an object instance. It is possible, however, to define an object's run time state, showing the set values of attributes in the particular instance.

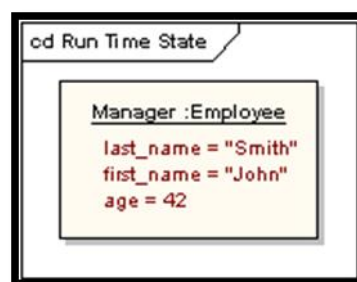


Figure 2.5: Run Time State

2.3.9 Example Class and Object Diagrams

The following diagram shows an object diagram with its defining class diagram inset, and it illustrates the way in which an object diagram may be used to test the multiplicities of assignments in class diagrams. The car class has a 1-to-many multiplicity to the wheel class, but if a 1-to-4 multiplicity had been chosen instead, that would not have allowed for the three-wheeled car shown in the object diagram.

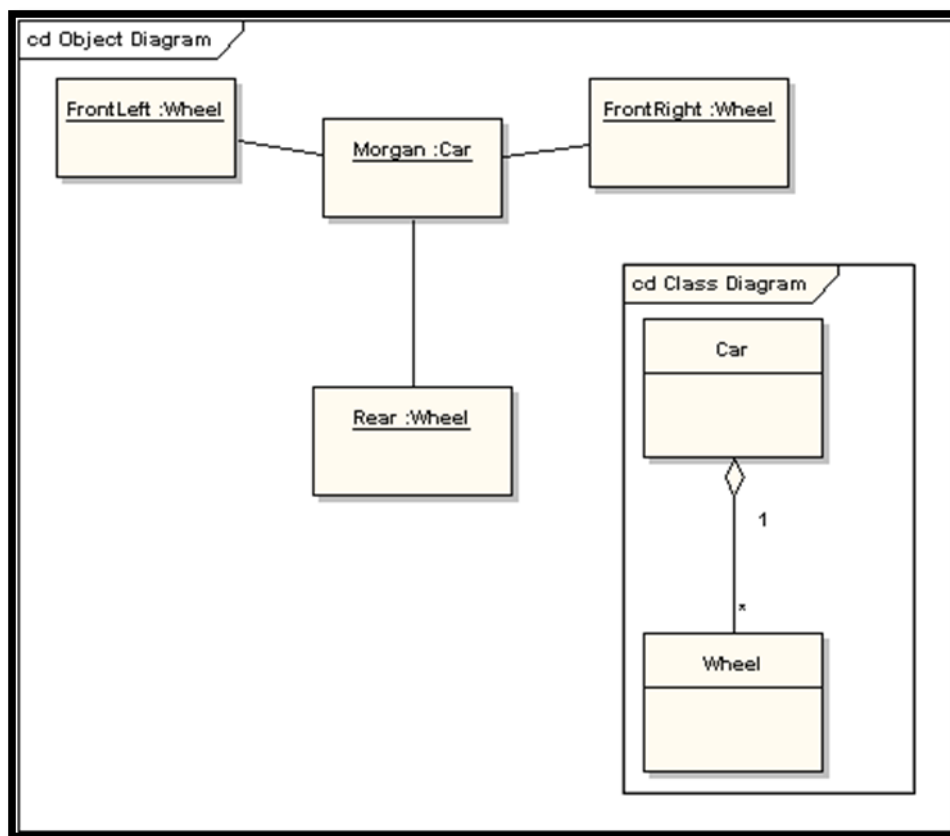


Figure 2.6: Examples of Class and Object Diagrams

2.3.10 Interfaces

An interface is a specification of behaviour that implementers agree to meet and it is a contract. By realizing an interface, classes are guaranteed to support a required behaviour which allows the system to handle non-related elements in the same way – that is by through the common interface.

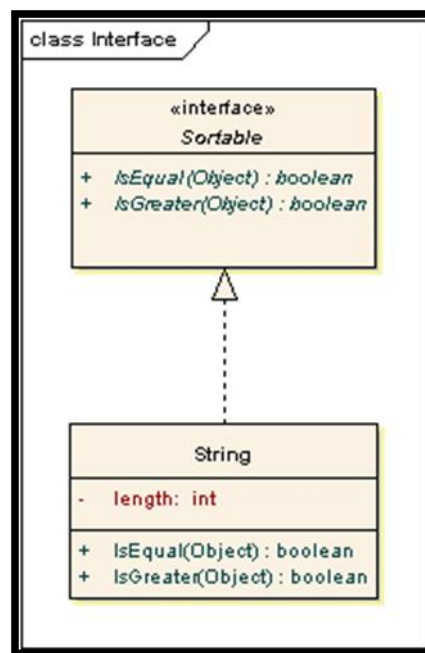


Figure 2.7: Interfaces

Interfaces may be drawn in same way to a class, with operations are specified. They may be drawn as a circle with no clear operations detailed. When drawn as a circle, realization links to the circle form by notation are drawn without target arrows.

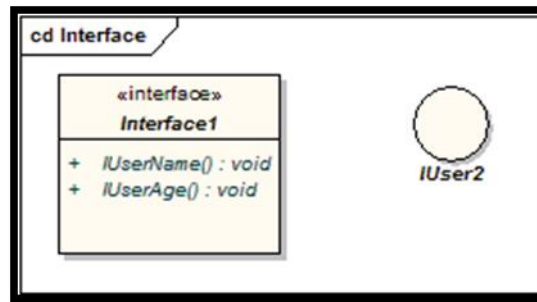


Figure 2.8: Interfaces

2.3.11 Tables

Although not a part of the base UML, a table is an example of what can be done with stereotypes. It is drawn with a small table icon in the upper right corner. Table attributes are stereotyped «column». Most tables have a primary key, being one or more fields that form a unique combination used to access the table and plus with a primary key operation which is stereotyped «PK». Some of the tables will have one or more foreign keys, being one or more fields that map together onto a primary key in a related table, plus a foreign key operation which is stereotyped «FK».

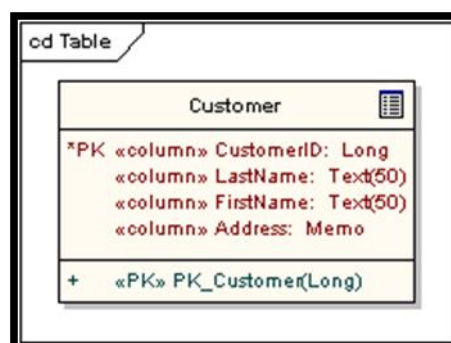


Figure 2.9: Tables of LADM

2.3.12 Associations

An association implies two model elements which have a relationship and it is usually implemented as an instance variable in one class. This connector may be included named roles at each end, cardinality, direction and constraints. Association is the general relationship type between the elements. For more than two elements, a diamond representation toolbox element can be used to associate them. When code is generated for the class diagrams, named association ends become instance variables in the target class. As for an example, "playsFor" will become an instance variable in the "Player" class.

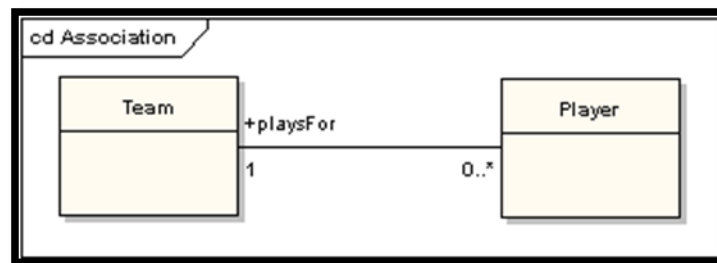


Figure 2.10: Associations

2.3.13 Generalizations

A generalization is used to show inheritance. Drawn from the specific classifier to a general classifier, the generalize implication is that the source inherits the target's characteristics. The following diagram shows a parent class generalizing a child class. Implicitly, an instantiated object of the Circle class will have attributes `x_position`, `y_position` and `radius` and a method `display ()`. Note that the class "Shape" is abstract and shown by the name being italicized.

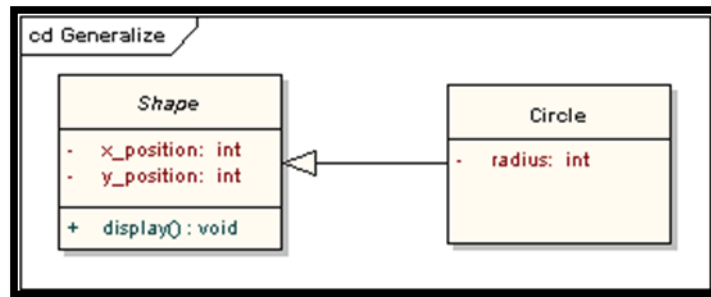


Figure 2.11: Generalizations

The following diagram shows an equivalent view of the same information.

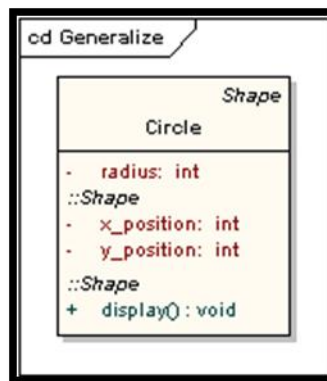


Figure 2.12: Generalizations

2.3.14 Aggregations

Aggregations are used to represent elements which are made up of smaller components. Aggregation relationships are indicated by a white diamond-shaped arrowhead pointing towards the target or parent class.

A stronger form of aggregation is a composite aggregation which is shown by a black diamond-shaped arrowhead and is used where components can be included in

a maximum of one composition at a time. If the parent of a composite aggregation is deleted, usually all of its parts are deleted with it. However a part can be individually removed from a composition without having to delete the entire composition. Compositions are transitive, asymmetric relationships and can be recursive.

The following diagram illustrates the difference between weak and strong aggregations. An address book is made up of a multiplicity of contacts and contact groups. A contact group is a virtual grouping of contacts; a contact may be included in more than one contact group. If you delete an address book, all the contacts and contact groups will be deleted too; if you delete a contact group, no contacts will be deleted.

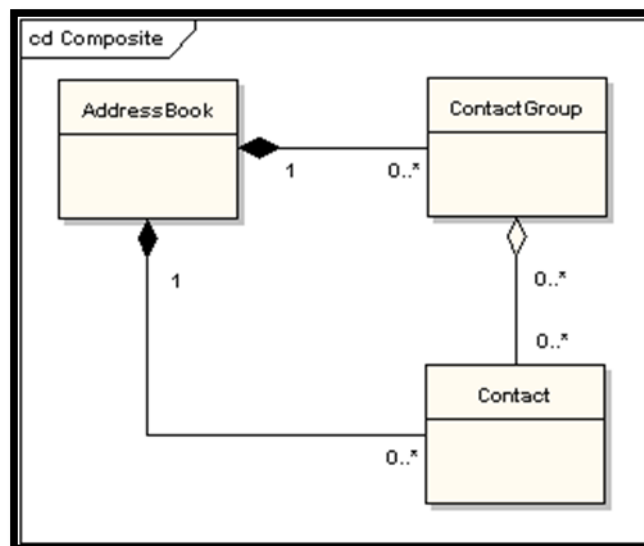


Figure 2.13: Aggregations and Composites

2.3.15 Association Classes

An association class is a construct that gives an association connection to have operations and attributes. The following example shows that there is more to

allocating an employee to a project than making a simple association link between the two classes: the role the employee takes up on the project is a complex entity in its own right and contains detail that does not belong in the employee or project class. For example, an employee may be working on several projects at the same time and have different job titles and security levels on each.

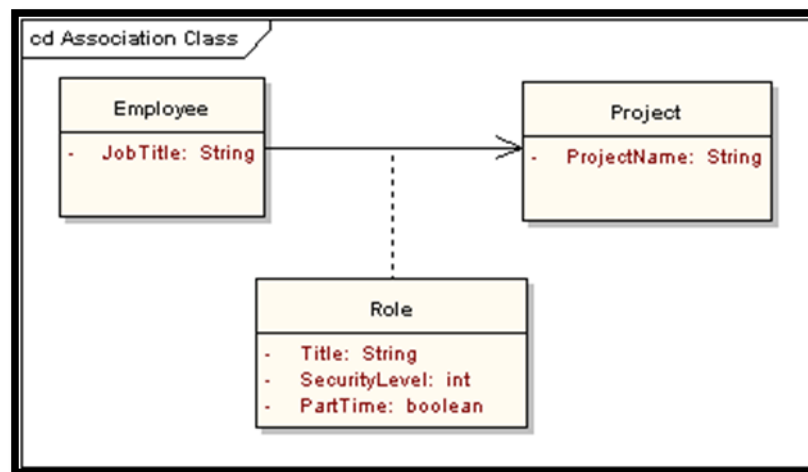


Figure 2.14: Association Class

2.3.16 Dependencies

A dependency is used to model a wide range of dependent relationships between model elements. It would normally be used early in the design process where it is known that there is some kind of link between two elements, but it is too early to know exactly what the relationship is. Later in the design process, dependencies will be stereotyped (stereotypes available include «instantiate», «trace», «import», and others), or replaced with a more specific type of connector.

2.3.17 Traces

The trace relationship is a specialization of a dependency, linking model elements or sets of elements that represent the same idea across models. Traces are often used to track requirements and model changes. As changes can occur in both directions, the order of this dependency is usually ignored. The relationship's properties can specify the trace mapping, but the trace is usually bi-directional, informal and rarely computable.

2.3.18 Realizations

The source objects implements or realizes the destination. Realizations are used to express traceability and completeness in the model - a business process or requirement is realized by one or more use cases, which are in turn realized by some classes, which in turn are realized by a component, etc. Mapping requirements, classes, etc. across the design of your system, up through the levels of modelling abstraction, ensures the big picture of the system remembers and reflects all the little pictures and details that constrain and define it. A realization is shown as a dashed line with a solid arrowhead.

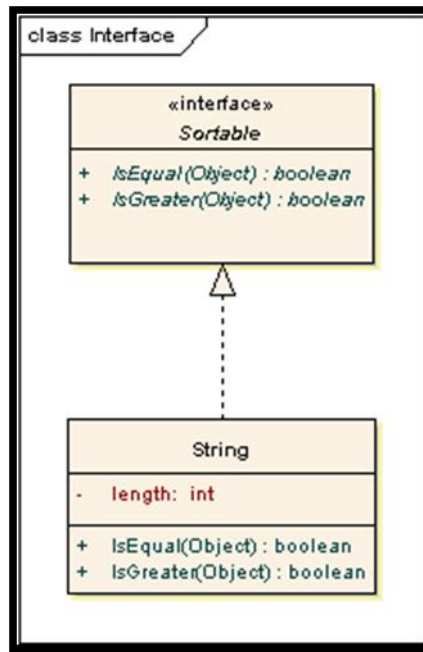


Figure 2.15: Realizations

2.3.19 Nestings

A nesting is connector that shows the source element is nested within the target element. The following diagram shows the definition of an inner class, although in Enterprise Architect it is more usual to show them by their position in the project view hierarchy.

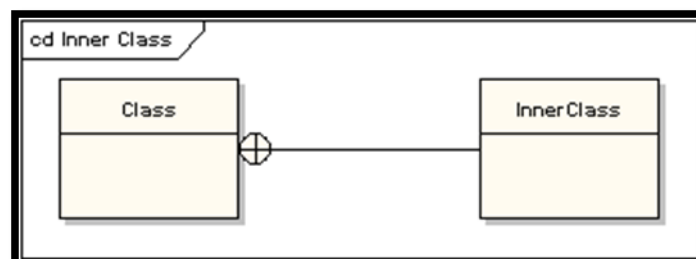


Figure 2.16: Nestings

2.3.20 UML Multiplicity

The multiplicity is the number of instances of the attribute for each class. The association relationship indicates that at least one of the two related classes makes reference to the other. The UML representation of an association is a line with an optional arrowhead indicating the role of the object in the relationship and an optional notation of each end indicating the multiplicity of instances of that entity which is the number of objects that participate in the association. In UML, the multiplicity is drawn with an asterisk or a number on the both sides on the association. When no multiplicity is given, both of the lower limit and the upper limit are usually assumed to be one “1”. If the attribute multiplicity includes zero “0”, then a null value is allowed. The common multiplicities are as follow:

- 0..* : zero or more
- 0..1 : optional
- 1..* : one or more
- 1..1 or 1 : mandatory or one only
- *: zero or more
- 3 : three only or exactly three
- 0..5 : zero or five
- 5..15 : five to fifteen
- n : unknown at compile time but bound/any number more than one
- 2,5 : two or five

2.3.21 UML visibility

Visibility makers indicate if an attribute or operation in a class can be accessed only from within that class, it means that the attribute or operation is private and denoted by ‘-’. If the attribute or operation can be accessed from with class and any derived classes, it means that the attribute or operation is protected and indicated by ‘#’. If the attribute or operation in a class from within the package that the class is a part of package, then the visibility symbol can be used is ‘~’. As for attribute or operation from anywhere, the attribute or operation can be denoted by public ‘+’. Visibility makers are placed at the start of the relevant attribute or operation and indicators of where the item can be seen. It is generally a decision detail. During the analysis, it is usually not specified unless otherwise indicated; assume all attributes and operations shown on the class are externally visible to any using classes. During design, it only uses attributes if space is required in the class and explicitly shows access and update operations if tool cannot generate them automatically. The visibilities are shown as follow:

- “-” : private visibility or no one
- “#” : protected visibility or friend and derived
- “~” : package visibility
- “+”: public visibility or everyone.

2.4 Malaysian Land Administration

In Malaysia, the functions of land administration are organised by Department of Survey and Mapping Malaysia (DSMM), State Land and Mines Office (PTG)/District Land Office (PTD) and State Valuation and Property Management Department who have the obligation for survey and mapping, land registration and land valuation respectively.

According to Tan Liat Choon (2013), Malaysian Land Administration is based on Malaysia land law while cadastral system in Malaysia consist of land registration system and cadastral survey and mapping registration system which have different structures and authorisations. This is due to land registration is a state government juridical while cadastral survey and mapping is under federal jurisdiction. It provides a variety of rights, depending on the traditions of the country. Land use rights are based on occupation of land over a long period and can be defined in written law or by traditions. Land is the fundamental for all forms human activities where its serves human needs and purposes. A systematic record of lands in all matter is very important in the land administration, planning and development of land. This means that, due to more and more needs of ground space, the traditional paradigm in law and legal should be changed (Nordin, 2001). Generally, land administration in Malaysia is responsible for collection of revenue, title registration; manage application for land dealings, change of condition of land use, subdivision, partition or amalgamation of land or building and so on.

The objective of the Malaysian land registration system is to give security and simplicity to all dealings with land. It establishes and certifies, under the authority of the government, the ownership of an indefeasible title to land and simplifies and reduces the costs of all land dealings. Valid titles require an accurate description of boundaries and as such, the cadastral survey plays an important role in the system. The Malaysian land administration system provides for textual and

spatial information that is consistent with the two main components of the system which are land registration and cadastral survey.

2.4.1 Malaysian Land Administration System

Malaysia is a federation of states. In Peninsular Malaysia, states are responsible for their own land matters. These states operate on a Torrens system which is administered by the State Land Office and coordinated by the State's Department of Land and Mines. On the other hand, cadastral surveys are controlled by the Department of Survey and Mapping Malaysia (DSMM) which is a federal department. DSMM is responsible for cadastral survey work within Peninsular Malaysia and supported by licensed land surveyors who are in charge of engineering and subdivision surveys. In Sabah and Sarawak, cadastral survey and land registration is administered by a single organization, named Department of Land and Surveys.

Malaysian land administration, based on Malaysian land law has two essential basic components that are land registration and the cadastral survey and mapping that have different structures and authorizations. In general, land administration in Malaysia is responsible for the collection of revenue, title registration, managing applications for land dealings, changing conditions of land use, subdivision, partition or amalgamation of land or building and so on. The traditional cadastre system that is used in Peninsular Malaysia is a parcel bound system and provides essential land and property information of the lots and land parcels. Land use right is the rights that are often based on occupation of land over a long period and can be defined in written law or by traditions. Therefore, a systematic record of land in all matters is very essential in the management, administration, planning and development of land due to the increasing demand for space, the traditional paradigm in law should be changed to keep up with the times.

2.5 Malaysian Customary Rights

According to SUHAKAM (2013), based on United Nation working definition, in Malaysia, “Indigenous Peoples” would include the aborigines of Peninsular Malaysia and the natives of Sabah and Sarawak, who are also recognised as such by the Federal Constitution and relevant State laws. Indigenous communities have their own age old customs related to the use and protection of lands, territories and resources. *Adat* also forms the foundation of life and existence, and serves as a blueprint in the maintenance order and social system, assertion of identity, education of the younger generation and upholding of traditional belief system and interpretation of reality. Indigenous peoples’ definition of *adat* includes both written and unwritten customs, rules and norms that govern every indigenous person and community. *Adat* encompasses customary laws, concepts, principles and practices, and the customary institution that implements and regulates such laws, concepts, principles and practices. In short, it can be called a holistic set of indigenous system of governance.

Adat in turn, is governed by traditional institutions, which typically comprise knowledgeable and respectable elders. The members of such institutions are also responsible for ensuring that community members understand and follow to *adat* and for continuity in the inter-generational transfer of knowledge. Over time however, the respect for, and composition of, traditional institutions have changed particularly with interference from the Government and the creation of new forms of institutions (SUHAKAM, 2013).

Malaysian customary rights are governed by the State Authority as customary rights are regard as State land matters. The Malacca Customary Land (MCL) is being used in Melaka and Sarawak has implemented its own customary right which is known as Native Customary Right (NCR).

2.5.1 Melaka

In the enforcement of land ownership control for Malays, Melaka did not use the Malay Reservation Enactment. There are no Malay reserve lands as the ones in the other states in the Peninsular. Customary Lands formed under the Malacca Lands Customary Rights Ordinance of the Straits Settlements Cap. 125. Then this ordinance is being repealed with the implementation of the National Land Code (Penang and Malacca Titles) Act 1963 (revised on 1994). Part VIII of the act (Section 94 to Section 109C), is divided into four chapters covering the topics of Preliminary, Application of the National Land Code and Restrictions in the use and interest. The use of Part VIII is for Melaka only under Section 95 and has to be applied together with the *National Land Code Act 56 of 1965* or Section 99 of the National Land Code. The rate and methods under the Land Ownership Methods 1965 is applied together with the Melaka Land Methods 1966. However, any inconsistency with Part VIII has to be given priorities to the National Land Code (Section 99). Part VIII also provides for the making of the new Melaka Customary Lands with a unique method and the Melaka Land Administration has produced two guidelines in the *Arahan PTG Bil. 1/89* and *Arahan PTG Bil. 2/92* to ensure efficient implementation as stated in National Land Code (1963).

These are some of the definitions which are stated in Malacca Customary Land:

- "Malays" means a person who is a Muslim, generally speaks in the Malay language and practices the Malay customs and was born in the Federation before Independence or was born from parents where one of them was born in the Federation or on that day has resided in the Federation; was born from the persons above.
- "*Syarikat Tanah Adat Melaka*" or "Malacca Customary Land Company" is a company registered under the Companies Act where all of the members are Malays, the establishment laws prohibits transfer of ownership of the shares to other people other than the Malays and one of the company objectives is to deal in the Melaka Customary Land. For the purpose of Part VIII, Malacca Customary Land Company is regarded as Malays.

- "*Tanah Adat Melaka*", also known as Customary Land in the Act is a customary land in the Malacca Lands Customary Rights Ordinance of the Straits Settlements SS Cap.125 before 1st January 1966 and it includes land that has been endorsed by MCL under section 109A(2) and land that has been reinstated or disposed under section 109B(3). The Customary Land holder is someone who has been registered as the owner of a Customary Land before 1st January 1966 under SS Ordinance Cap 125.

After 1st January 1966, the Registration of Ownership under SS Ordinance Cap.125 must continue to be used but it must be known as Malacca Customary Land Register (Section 102). The administrator must prepare and produce the continuous registration document according to the procedures of district title, which has been set in the National Land Code. The Customary Land Register must be maintained separately from all other land ownership registration (Section 102(5)).

The Melaka customary land cannot be transferred, leased, passed down or mortgaged to other people other than Malays. Lease does not include rental less than three years or between three years and not more than thirty years. Lease to persons other than the Malays cannot be transferred or sub-leased to persons other than the Malays (Section 108). Lien by depositing the published ownership document as loan guarantee cannot be made if the persons other than the Malays and the caveats supporting the lien cannot be registered under the National Land Code. Other than those entered by the Registrar, all caveats on the Melaka customary land cannot be registered under the National Land Code if the caveator is a person other than a Malay or if the person acts as the agent, the principal is a person other than a Malay. Trust in any forms whether clear or hidden which is done by the land owner for the benefit of non-Malay is null and void and cannot be enforced in any courts. Grant of probate or Letters of Administration cannot be implemented to register Melaka customary land to the representative other than the Malays. *Amanah Raya* and Property Holder Officer are regarded as Malays. Authorization Letter in any form cannot be given or made to persons other than the Malays.

Melaka Customary Land are lands whose ownership is controlled but there is no provision to establish new customary lands, either by reserving or gazetting an area or giving normal land the ownership from a government land which can be implemented by the state's local authority. The number and area of the Melaka Customary Land in general will not increase. In fact, it is getting lesser due to frequent reclamation of land under the Land Reclamation Act 1960. The status of the Melaka Customary Land will be lost for lands reclaimed under the act and will not be replaced. Any reinstatement or disposal of land will be a government land according to the National Land Code. The original Melaka Customary Land under the Malacca Lands Customary Rights Ordinance of the Straits Settlements SS Cap 125 and Part VIII of the Act gives people the opportunity to establish new Melaka Customary Lands to new legible owners as Malays to convert their lands to Melaka Customary Land. The state's local authorities must dispose government land as Melaka Customary Land if the land is previously a Melaka Customary Land which was surrendered, confiscated due to a breach in terms and conditions or failure to pay quit rent. This procedure must be practiced at all times so that Melaka Customary Land can be protected from becoming extinct.

2.5.2 Sarawak

The main legislation on land in Sarawak is the Sarawak Land Code 1958. The Land Code implemented on 1st of January 1958 and was an integral part of the land law system when Sarawak joined Malaysia in 1963. It is based on a Torrens system of title by registration, where a person can claim ownership or interest must have a valid document of title in the form of a grant, lease or other documentary evidence of title or interests. It also provides for a system based on customary rights for which no registration is valid. The Torrens system envisages the survey and permanent markings of individual boundaries of land held under title and imply Government guarantees of both boundaries and title. This guarantee however does not extend to

native customary lands. According to Sarawak Land Code (1958) Chapter 81 under section 2, the Native Customary Land means:

- i. land in which native customary rights, whether communal or otherwise, have lawfully been created prior to the 1st day of January, 1958, and still subsist as such;
- ii. land from time to time comprised in a reserve to which Section 6 applies; and
- iii. Interior Area Land upon which native customary rights have been lawfully created pursuant to a permit under Section 10.

According to Laws of Sarawak (1958), Section 5 (1) of the Sarawak Land Code (1958) states that the creation of native customary rights after 1 January 1958, except in accordance with the requirements of the statute. Native Customary Right can be created in Interior Area Land if a permit is acquired from the Superintendent under section 10. The methods by which native customary rights may be created are:

- i. the felling of virgin jungle and the occupation of the land thereby cleared;
- ii. the planting of fruit trees;
- iii. the occupation or cultivation of land,
- iv. the use of land for burial grounds or shrines, or
- v. the use of land of any class for rights of way; or
- vi. any other lawful method (deleted in 2000 but yet to be enforced).

2.6 Summary

Land Administration is the process of determining, recording and disseminating about tenure value and use of land when implementing about the tenure, value and use of land when implementing land management policies. Land registration, cadastral surveying and mapping, legal and multipurpose cadastre and land information system. In order to smooth the implementation of the land administration, Land Administration Systems (LAS) needed to be implemented as it

is an important infrastructure in handling land markets but at the same time concerned with the administration of land as a natural resource.

Rights are also included in both of the Land Administration and Land Administration System as it is concerning about the land ownership that is commonly used in land management to define the rights to use land that can be owned. On the other hand, customary rights is involving customary tenure which presents the idea of traditional rights to land and other natural resources. This customary tenure usually associated with indigenous communities and administered according to their customs.

Land Administration Domain Model (LADM) is an important model where the information about land administration can be described in a conceptual way and to provide the information in more detail. The transparency through the inclusion of source documents and the inclusion of the names of persons with roles and responsibilities can be mapped into the model. In modelling of LADM, Unified Modelling Language (UML) is the standard language that is used to model to LADM. One of the purposes of UML was to provide the development community with a stable and common design language that could be used to develop and build computer applications such as a standard language for object-oriented software at a conceptual level and Geographical Information System application. UML brought forth a unified standard modelling notation, multiplicity and visibility. By using UML, the system structure and design plan can be read and disseminated. This language can be also be used to model the structure schema of a data model at the conceptual level.

Regarding the Malaysian Land Administration, the functions of land administration are organised by Department of Survey and Mapping Malaysia (DSMM), State Land and Mines Office (PTG)/District Land Office (PTD) and State Valuation and Property Management Department who have the obligation for survey and mapping, land registration and land valuation respectively. Malaysian land

administration is based on Malaysian land law has two essential basic components that are land registration and the cadastral survey and mapping that have different structures and authorizations.

In Malaysia, the definition of indigenous people refers to the aborigines of Peninsular Malaysia and the natives of Sabah and Sarawak. Indigenous communities have their own age old customs related to the use and protection of lands, territories and resources. Customary Rights is a state land matter and the state authority. Each state like Melaka and Sarawak has implemented its own Customary Rights in their legislations. Different definitions of customary rights are defined by each state due to the indigenous people living in the each state.

By referring to the Malacca customary land, "Malays" means a person who is a Muslim, generally speaks in the Malay language and practices the Malay customs and was born in the Federation before Independence or was born from parents where one of them was born in the Federation or on that day has resided in the Federation; was born from the persons above and they have the rights of Malacca Customary Land. On the other hand, in Sarawak, Native Customary Rights (NCR) is only applicable to the natives of Sarawak only. The natives mentioned are referring to the indigenous people of Sarawak.

CHAPTER 3

RESEARCH METHODOLOGY

3.0 Introduction

In this chapter, the focus is concentrated on the methodology of the study in obtaining the information about the differences of the Malaysian customary rights for suggested states which are Melaka and Sarawak and comparing the differences between them. The Malaysian Land Administration Domain Model (LADM) country profile for non-spatial and spatial customary rights is constructed based on the information obtained through the comparison and differences between the customary rights of Melaka and Sarawak. The flow chart of the methodology of this study is summarized in Figure 3.1.

A series of work flows will be designed in order to compare the Customary Rights in Malaysian Land Administration System. Those work flows will also be used to propose a suitable Land Administration Domain Model for Customary Rights in Malaysia.

3.1 Research Methodology

In order for this research undergoes a good and efficient working flow, the methodology is divided into four phases. This is created to optimise time management for the research and work accordingly to the proposed procedures.

3.1.1 First Phase

For the first phase of this research is the determination of the issues and problems to match the objectives of this research. Under this phase, identification of issues and problems, determination of research objectives and scopes, and the significance of the study are made to ensure the purpose of the research is maintained. Literature review and familiarisation of software Modern Driven Architecture (MDA) software are needed to accomplish in the first phase for purpose of gaining full understanding and general perspectives of this research. The sources for the literature review are conference paper, newspaper, reference books, thesis and websites.

3.1.2 Second Phase

In the second phase, the data collection is included as to collect important and relevant data for this research. The data is split into primary data collection. Primary data National Land Code 1965 (Act 56), National Land Code (Penang & Melaka Titles) Act 1963, Land Administration Domain Model Standards (ISO 19152) and Sarawak Land Ordinance and come from a valid and pure source.

3.1.3 Third Phase

The third phase is about data analysis. The analysis is done on the acquired data from the second phase. Comparisons of the differences of the customary rights between Melaka and Sarawak and proposed a suitable Land Administration Domain Model for customary rights in Malaysia are the main components of the third phase. Modern Driven Architecture (MDA) is the main software of this phase. Identified comparisons of customary rights in Malaysia will be expressed in Unified Modelling Language (UML) in the form of diagrams by using Modern Driven Architecture.

3.1.4 Fourth Phase

The final phase of the research is the fourth phase. In this phase, results of this research will be obtained and discussions will also be made. Conclusions and recommendations are going to be given based on the perspective of the Customary Rights in Malaysia and Malaysian Land Administration System.

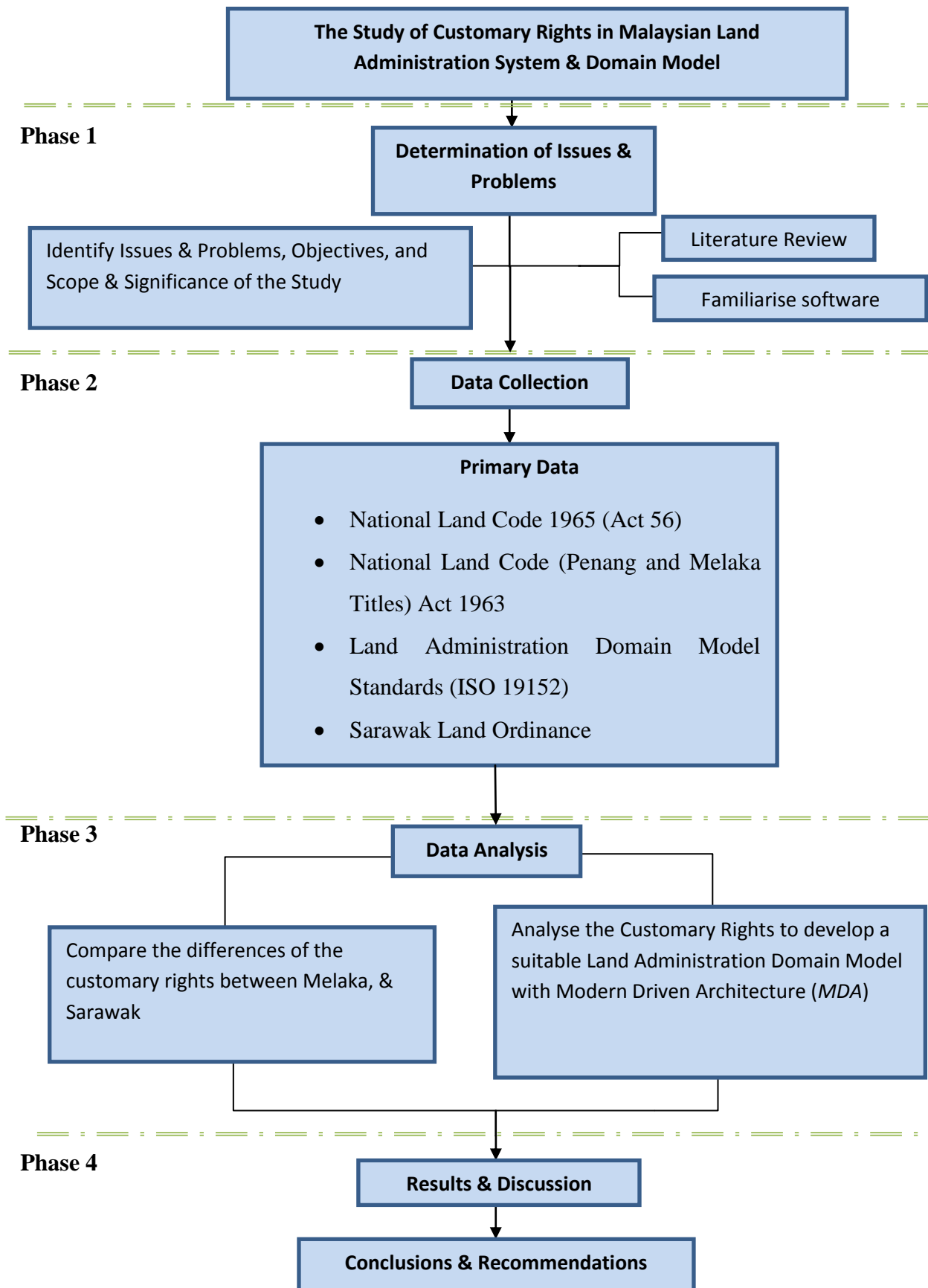


Figure 3.1: Overview of the Methodology

CHAPTER 4

RESULTS AND ANALYSIS

4.0 Introduction

In this chapter, the comparisons of customary rights of Melaka and Sarawak are described to provide some general ideas about the comparisons. After the comparisons of customary rights, the comparisons are used as information in order to model a Customary Domain Model.

4.1. Customary Rights in Melaka

In executing the control of land ownership for the Malays, Melaka does not use the Malay Reservation Enactment, thus it does not have any Malay Reserves like many other states in Peninsula Malaysia. In Melaka, such land is known as Melaka Customary Land (MCL) is used, which was formed under the Malacca Lands Customary Rights Ordinance of the Straits Settlements SS Cap.125. The ordinance

was eliminated with the enforcement of the National Land Code (Penang & Malacca Titles) Act 1963 (Revised 1994) on 1st January 1966.

Part VIII of the act, from section 94 to section 109C is split up into four chapters covering the following titles: Preliminary, Application of the National Land Code, Certificated Lands and Restrictions in Use and Interest. The utilization of Part VIII is applied for the state of Melaka only as stated in section 95 of the land code and must be used together with the National Land Code Act 56 of 1965 or section 99 of the National Land Code (Penang & Malacca Titles) 1963 (Act 518). The rates and procedures under the Land Ownership Procedure 1965 must be applied together with Melaka Land Procedure 1966. However, to settle any discrepancies, Part VIII must be given priority than the National Land Code as stated in section 99 of the National Land Code (Penang & Malacca Titles) 1963 (Act 518).

Part VIII gives the establishment of the new Melaka Customary Land with a distinct procedure and the Melaka Land Administration has issued two guidelines in the State Land and Mines Office Direction No 1/89 and No 2/92 to ensure smooth implementation.

4.1.1. Definition

These definitions are as stated in the National Land Code (Penang and Malacca Title) 1963 (Act 518). "Malays" means a person who is a Muslim, generally speaks in the Malay language and practices the Malay customs and was born in the Federation before Independence or was born from parents where one of them was born in the Federation or on that day has resided in the Federation; was born from the persons above. "*Syarikat Tanah Adat Melaka*" or "Malacca Customary Land Company" is a company registered under the Companies Act where all of the

members are Malays, the establishment laws prohibits transfer of ownership of the shares to other people other than the Malays and one of the company objectives is to deal in the Melaka Customary Land. For the purpose of Part VIII, Malacca Customary Land Company is regarded as Malays. "*Tanah Adat Melaka*", also known as Customary Land in the Act is a customary land in the Malacca Lands Customary Rights Ordinance of the Straits Settlements SS Cap.125 before 1st January 1966 and it includes land that has been endorsed by MCL under section 109A(2) and land that has been reinstated or disposed under section 109B(3).

The Customary Land holder is someone who has been registered as the owner of a Customary Land before 1st January 1966 under SS Ordinance Cap 125. A person who has receive a certificate from the State's Local Authority according to section 104 or a non-Malay that has been considered as the owner of a Customary Land is known as a Certificated Person. A Certificated Person has the rights to be registered as an owner of a Customary Land other than the land mentioned in the certificate. A Certificated Person as the owner of the Customary Land has the permanent rights regarding the ownership of the land, and if the person dies, the land can be transferred according to laws that have been implemented. The customary land in the Malacca Customary Land Register which is hold by a Certificated Person is a Certificated Land according to section 105. If the Certificated Land, at any time, either by transfer of ownership, inheritance or any other procedures is registered under as Malay, the status of the Certificated Land will be lost. Melaka Customary Land, which is considered by the Land Administrator to be subjected to the Naning customs, the land must be registered with the word "Naning Custom" according to section 97.

After 1st January 1966, the Registration of Ownership under SS Ordinance Cap.125 must continue to be used but it must be known as Malacca Customary Land Register according to section 102. The administrator must prepare and produce the continuous registration document according to the procedures of district title, which has been provided in the National Land Code. The Customary Land Register must be

preserved separately from all other land ownership registration as stated in section 102(5).

4.1.2 Ownership Control and the Administration of Melaka Customary Land

The Melaka customary land cannot be transferred, leased, passed down or mortgaged to other people other than Malays. Lease is not included rental less than three years or between three years and not more than thirty years. Lease given to persons other than the Malays cannot be transferred or sub-leased to persons other than the Malays according to section 108. Lien by depositing the published ownership document as loan guarantee cannot be made if the persons other than the Malays and the caveats supporting the lien cannot be registered under the National Land Code (Penang & Malacca Titles) 1963 (Act 518). Other than those who entered by the Registrar, all caveats on the Melaka customary land cannot be registered under the National Land Code if the caveat is someone other than Malay or if the person acts as the agent, the first in order of importance is a person other than Malay. Trust in any forms whether clear or hidden which is done by the land owner for the benefit of non-Malay is null and void and cannot be enforced in any courts. Grant of probate or Letters of Administration cannot be applied to register Melaka customary land to the representative other than the Malays. *Amanah Raya* and Property Holder Officer are regarded as Malays. Authorization Letter in any form cannot be given or made to persons other than the Malays.

4.1.3 Important Features of a Melaka Customary Land

A Melaka Customary Land is given a District Title under the ownership of the land office and has a permanent status. The annual quit rent for the Melaka Customary Land is half (1/2) of the quit rent imposed of normal lands under the same Land Usage Type and Evident Terms. Premium that is imposed on approved land development such as boundary division or change of conditions for Melaka Customary Land is half (1/2) from the rate imposed on normal lands. Melaka Customary Land Ownership does not have any importance blockage other than those contained in Part VIII of the Act. The ownership of a Melaka Customary Land can be mortgaged to any organizations in Schedule 6 and can be transferred to other organizations listed in Schedule 7. Other organizations can apply with the local authorities in the state to be listed in Schedule 6 or 7 to join in the development of Melaka Customary Land. Please refer to Appendix A and B for Schedule 6 and 7, individually.

The ownership of a Melaka Customary Land can be leased to persons or organizations other than the Malays for a period not more than 30 years. The witnessing of a Melaka Customary Land must be executed in front of a Land Administrator as specified under Schedule 5 of the National Land Code (Penang & Malacca Titles) 1963 (Act 518). Please refer to Appendix C. Melaka Customary Land Company is regarded as Malay and is free to deal as the owner of a Melaka Customary Land. However, if the company is no longer a Melaka Customary Land Company according to section 94(1), the land can be confiscated by the state's local authority.

4.1.4 Establishment of a Melaka Customary Land

Melaka Customary Land are lands whose ownership is controlled but there is no provision to establish new customary lands, either by reserving or gazetting an area or giving normal land the ownership from a government land which can be implemented by the state's local authority. The number and area of the Melaka Customary Land in general will not increase. In fact, it is getting lesser due to frequent reclamation of land under the Land Reclamation Act 1960. The status of the Melaka Customary Land will be lost for lands reclaimed under the act and will not be replaced. Any reinstatement or disposal of land will be a government land according to the National Land Code (Penang & Malacca Titles) 1963 (Act 518). The original Melaka Customary Land under the Malacca Lands Customary Rights Ordinance of the Straits Settlements SS Cap 125 and Part VIII of the Act gives people the opportunity to establish new Melaka Customary Lands to new legible owners as Malays to convert their lands to Melaka Customary Land. The procedure of implementation is in Appendix D. The state's local authorities must dispose government land as Melaka Customary Land if the land is previously a Melaka Customary Land which was surrendered, confiscated due to a breach in terms and conditions or failure to pay quit rent. This procedure must be practiced at all times so that Melaka Customary Land can be protected from becoming extinct.

4.1.5 Development of Melaka Customary Land

The Melaka Customary Land is allowed to be developed like other lands. In fact, it should be more interesting because it enjoys half the rate for all payments under Melaka Land Procedure 1966. Melaka Customary Land is allowed to be mortgaged to any organizations listed in Schedule 6 and any organizations or financial institutions can apply to be listed in the schedule. At this time, there is no provision that allows Melaka Customary Lands in the city to be leased in exchange

for a lease outside the city that is made a Melaka Customary Land. For the purpose of development, it can only be done through the process of land reclamation.

4.2 Customary Rights in Sarawak

The Land Code of Sarawak is the principal law governing land in Sarawak. This Code was passed in 1957 and came into force on 1st January 1958. The Code consolidates all legislations in force at that time. According to section 44 of the land code, no rights to land may be acquired save in accordance with the provisions of the Land Code.

The Land Code recognizes native customary rights over land, provides the methods whereby native customary rights can be created over State land, and where such rights are created or acquired prior to 1st January 1958, their creation or acquisition would be governed by laws in force immediately prior to 1st January 1958. These are according to section 5(1) and 5(2) of the land code. After 1st January 1958, Native Customary Rights may be created over Interior Area Land upon permit issued under Section 10 of the Land Code.

The Sarawak Land Code 1958 is based on a Torrens registration system which only validates registered interests in land. The person who wants to claim ownership or interest must have a document of title in the form of a grant, lease or other document as evidence of title or interests.

The Sarawak government's strategy for economic growth through the commercial development of agricultural land has resulted in large areas of land being opened for large-scale plantations, including oil palm. In other places, this will affect

lands which are subjected to native customary rights. When such rights are established over a tract of Interior Area Land, it becomes Native Customary Land. The latest type of development scheme is the New Concept which is one that is used the concept of fiduciary trust in the formation of joint ventures between native landowners, the government and large corporations.

4.2.1 Definitions

In Sarawak, Native refers to the indigenous groups who inhabit the state, as listed in the schedule to the Sarawak Interpretation Ordinance and Article 161A, Clause 6 of the Federal Constitution. Despite the existence of numerous groups, the term ‘Dayak’ is colloquially used to refer to all the non-Muslim natives, differentiating them from the Malays, who by legal definition are Muslims according to Bulan (1999) and Hooker (2000). However, it is notable that the constitutional definition of natives in Sarawak includes the Malays. While the Malay-Melanau groups are coastal dwellers, the Dayaks are typically longhouse dwellers whose livelihood depends on the jungle and on swidden farming. Occupying the intermediate zones and the interior areas of Sarawak, their geographical locations and dependence on the land clearly determine the way that land administration affects them.

In section 2 of the Sarawak Land Code, native customary right is defined as:

- i. land in which native customary rights, whether communal or otherwise, have lawfully been created prior to the 1st day of January, 1958, and still subsist as such;
- ii. land from time to time comprised in a reserve to which Section 6 applies; and
- iii. Interior Area Land upon which native customary rights have been lawfully created pursuant to a permit under Section 10.

According to Section 2 of the land code, customary law means a custom or body of customs to which the law of Sarawak gives effect. Native area land is also included in the section 2 means land other than mixed zone land:

- i. Held by a native under a document of title
- ii. Declared to be such under a subsisting declaration made under the former land (classification) Ordinance, 1948, or under section 4(2) or (3)
- iii. Which becomes native area land by virtue of section 4(4)(b)
- iv. Which becomes native area land by virtue of a direction under section 38(5).

As for Native customary land in section 2 means:

- i. Land in which native customary rights, whether communal or otherwise, have lawfully been created prior to the 1st day of January, 1958 and still subsist as such;
- ii. Land from time to time comprised in a reserve to which section 6 applies
- iii. Interior area land upon which native customary rights have been lawfully created pursuant to a permit under section 10;

Native system of personal law means the customary law applying to any community, being a community forming the whole or part of any native race specified in the Schedule to the Interpretation Ordinance.

The definition native customary rights is stated in Section 5(1) of the Sarawak Land Code 1958, it stated that as from to the first day of January 1958, native customary rights may be created in accordance with the native customary law of the community or communities concerned by any of the methods specified in subsection (2), if a permit is obtained under section 10, upon interior area land. save as aforesaid, but without prejudice to the provisions herein after contained in respect of Native Communal Reserves and rights of way, no recognition shall be given to

any native customary rights over any land in Sarawak created after the first day of January 1958 and if the land is State land any person in occupation thereof shall be deemed to be in unlawful occupation of State land and section 209 shall apply thereto.

4.2.2 Ownership Control and Administration of Native Customary Rights

When the native customary rights are to be extinguished by the government, compensation will be paid to the affected natives. No State land which is encumbered by native customary rights may be alienated without payment of compensation.

However, that document of title issued to the land, a Native Customary Rights land would remain as state land. Any native who legally possess the land would be treated as a licensee of the government and are not required to pay taxes on it unless and until a document of title issued to him.

The question of whether the native right exists or extinguish will be determined by the laws in force before 1 January 1958 unless the State Land Code 1958 provides otherwise.

In validation the status of NCR lands, the Land and Survey Department using the following methods:

- i. Information on the interpretation of aerial photographs until 1955;
- ii. Current Land Use Map;
- iii. Field Book , Cadastral Sheet; and

- iv. Information from local community leaders, the elderly in the village, the owner of the adjacent land and land claimants themselves.

As stated in section 18 of the land code, the grant to the natives is provided when the superintendent that a native has occupied and used any area of un-alienated State land in accordance with rights acquired by customary tenure amounting to ownership of the land for residential or agricultural purposes, he may, subject to section 18A, issue to the native in perpetuity of that area of land free of premium rent and other charges. The section 18A of the land code stated that a grant in perpetuity under this section shall be made for residential or agricultural purposes, as the case may be, subject to such conditions, obligations and restrictions, as the Director on the direction of the minister, may impose.

4.2.3 Important Features of Native Customary Rights

In the restrictions transaction on native customary rights, first paragraph of the *Pekeliling Sekretariat No. 12, 1939* allocate that the purpose of government is to prevent any people remain in poverty by selling their land to others, whether natives or non- natives. For instance, if the customary land owned by *Ibans*, those rights are enjoyed by the people as a whole, and any members who left the house to live elsewhere, their rights can be taken over by other members of the same community. Native customary land rights can be inherited and used as a gift by the owner to his heirs. However, transactions on the native customary land with the contract of sale are prohibited. Under the Malay custom, native customary land may be transferred to them in the same community and in the same village. Transactions between native and non-native were not permitted under Section 8 (b) of the Land Code.

Native customary rights are limited rights and are not absolute. Therefore, these rights can be lost through the land acquisition of Native Customary Rights with the payment of compensation by the government. The acquisition of customary rights over land has been allowed by law since the Land Order 1931 with effect from January 1, 1932. Section 92 of the Land Order 1931 provides that in the event of any native customary land is required for public use, after being sent to the notice to the land owner or the person who stayed on the land, the compensation to be paid by the Superintendent of Lands and Surveys, which is according to a reasonable condition. Section 5 (3) and (4) of the Land Code (Chapter 81) provides for the Land Acquisition of Native Customary Rights and procedures for recruitment, determination of compensation claims for those whose rights are taken back and the arbitration process for those who are not satisfied with the compensation offer of the Superintendent of Lands and Surveys.

For the compensation over land acquisition native customary rights, compensation must be paid if the NCR were taken back for the purpose of alienation of state land or if the land is need for public purposes. The basis for compensation is the loss of the right to occupy the land rights of indigenous natives who do not have title deeds. The rates of compensation are as follows:

- i. Compensation will be given based on the results obtained by the plaintiff from the ground if he exercises his right to be planted on the land.
- ii. Determination of land value takes into account the sale price of bona fide entitled to possession of the land nearby.

Under Section 5 (3) of the Land Code, the government can allocate land to replace the land rights of natives which are taken back. Native customary rights will not be alienated or used for public purposes until all rights have been taken back by the payment of compensation.

4.2.4 Establishment of Native Customary Rights

The methods for acquiring native customary rights in Sarawak are quite unique. These are the following methods which are provided in the section 5(2) of the Sarawak Land Code 1958 Chapter 81:

- i. The felling of virgin jungle and the occupation of the land thereby cleared
- ii. The planting of land with fruit trees
- iii. The occupation or cultivation of land
- iv. The use of land for a burial ground or shrine
- v. The use of land of any class for right of ways

The procedures of the productions of ownership according to Section 18 on Native Customary Rights are as follows:

- i. Individual Land Application

Individual land application involving either state land or land rights of the natives was very active before 1964. However, after taking into account the results of the 1962 Report of the Committee of the land, the practice of individual processing of applications for land have been discontinued in June 1964 because it was found that this practice takes long and unprofitable in terms of economic development on the ground.

However, the government is still considering any application for individual or group if the land applied for was occupied and exploited fully. For NCR land is not worked, the owner of the land would be advisable to develop them through the development of Native Customary Rights in collaboration with agencies such as FELCRA (Federal Land Consolidation and Rehabilitation Authority), SALCRA (Sarawak Land Consolidation and Rehabilitation Authority) and PELITA (Land Custody and Development Authority).

ii. Settlement Operations

Settlement is the process of measuring operations and determines rights to land, to enable the land registered in the Land Register. This process provided for in Part V of the Land Code (Chapter 81). However, this operation is time-consuming and costly. Production of land by this method is based on production rather than ownership of land development. As a result, many of ownership issued by this operation was sold and transferred to third parties solely to gain a quick profit.

iii. Measurement Traditional Village

The traditional village is a village that has long existed, whether in the area was gazetted as Native Common Land or that have not been gazetted. The traditional village which also include *Bidayuh* village has houses being built separately. Criteria for determining priorities for this measure is a traditional village with regard to the village is an area that has long existed and has infrastructure such as roads, schools, hospitals and others. The village must be jam packed with houses and a way out to every existing house. In addition, residents must not have any border dispute claim residential area.

4.2.5 Development of Native Customary Rights

New concept of Native Customary Rights was implemented in September 1994. New concept of Native Customary Rights land rights of the natives combines small size but connected as it is to be developed commercially for the sake of improving the living standards of rural people population. With the agreement made by the three parties which is also known as the tripartite arrangement between the private sector as an investor, the owner of the land, and PELITA as a management agent and trustee for the owners of the land rights of the indigenous natives, land

titles will be issued to the joint venture company (JVC) for a period of 60 years which is equal to two rounds of cultivation. Each party of the investor, the owner of the land rights of native and light will each hold 60% equity, 30 % and 10 %.

Investors and PELITA pay their share of the capital cost while the owner of the land to contribute their shares through a consideration for the use of their land to the value of RM1200 per hectare. After 60 years of operation and after the expiry of the tenure of ownership JVC, the offer will be given to the owners of the land rights of native whether to connect to the same JVC or establish new companies. If landowners do not intend to connect JVC, then they can apply to remove their ownership on the property in accordance with section 18 of the land code for the rights of native customary land.

New Initiatives indigenous Native Customary Rights to provide continuous recognition and long-term security of land tenure rights of the natives. Through this new initiative, NCR land rights which have been measured can be developed together with other government agencies such as FELCRA, PELITA, SALCRA and so on. It also adds value to the land and to facilitate efforts to develop the land commercially for the welfare of the land owners. This new initiative is involving landowners of various native races throughout Sarawak.

New initiatives are implemented through a two-stage approach. In the first stage, the perimeter will be carried out on the land rights of the indigenous natives and then the land gazetted as Natives Common Reserve under Section 6 of the Land Code. These measurements will isolate the native customary land and the government land and this in turn will prevent the invasion and disputes between landowners.

In the second stage, the individual measurements will be carried out and this was followed by the release of document of title in the appropriate period which is provided under Section 18 of the Land Code.

4.3 Comparison of Customary Rights of Melaka and Sarawak

The comparison of customary rights of Melaka and Sarawak is made based on the legislations which are used in each of the state mentioned. In Melaka, the legislation that is being used in administering the customary rights is the National Land Code (Penang and Malacca Titles) Act 518 1963. In this land code, the customary rights are described in part VII of the land code which is titled provisions relating to Malacca. On the other hand, Sarawak Land Code Chapter 81, 1958 is used to administer the Native Customary Rights. The Native Customary Rights is stated in section 5 of the Sarawak Land Code 1958. Both of these legislations are used to compare the customary rights which are provided in both Melaka and Sarawak. Comparison of the customary in Melaka and Sarawak are divided in three items which are tenure, registration and demarcation.

4.3.1 Tenure

In terms of tenure, the comparisons are of customary rights of Melaka and Sarawak are divided into ownership, land laws and registered owner. This is shown in the table below.

Item	Melaka	Sarawak
Ownership	Yes	Yes
Land Laws	Yes	Yes
Registered owner	Yes	Yes

Table 4.1: Comparisons of land tenure

Both of Melaka and Sarawak have land ownership for customary land. The land law that is used in Melaka is the National Land Code (Penang & Malacca Titles) Act 1963 (Revised 1994). As for Sarawak, the main land law that is implemented is the Sarawak Land Code Chapter 81 (1958 edition). Both the customary right in Melaka and Sarawak have register owner for customary land. The land owner of customary land for Melaka is known as certified person or Malays while for the land owner of customary land in Sarawak is known as natives.

4.3.2 Registration

The customary rights of Melaka and Sarawak are then compared in terms of registrations. The items of registrations are the register title, category of land use and content in the registry. The comparisons are shown in the table below.

Item	Melaka	Sarawak
The Register Title	Yes	Yes
Category of land use	Yes	Yes
Content in Registry	Yes	Yes

Table 4.2: Comparisons of land registrations

In Melaka, the register title that is being used is the Malacca Customary Land Register for customary land and the Melaka Customary Land, which is considered by

the Land Administrator to be subjected to the Naning customs, the land must be registered with the word "Naning Custom" according to section 97. As for the category of land use with customary rights, the categories are divided into three which are the Malacca Customary Land, Government land and normal land.

In Sarawak, the register title that is being used is the Native Customary Land and these lands only can be acquired by the natives of Sarawak. The category of land use in Sarawak customary rights are mixed zone land, native area land, native customary land, reserved land and interior area land.

Both of the states have conditions and attributes which are required in the content of registry.

4.4.3 Demarcations

Next, the comparison is based on demarcation. Both Melaka and Sarawak have all the items as shown in the table below. Melaka has provision for finality of certain boundaries for customary land. According to section 98 of the National Land Code (Penang & Melaka Title) Act 518 (Revised 1994) the boundary of any holding is deemed to have been finally ascertained under the Ordinance, or where the proprietor or mortgagee of any such holding or any of his predecessors in title has. Any conveyance or other instrument or in any enquiry under this Act dealt with or accepted the boundaries of such holding as surveyed under the Ordinance. Such boundary shall be deemed for the purposes of this Act to be final and conclusive and shall not be called in question in any proceedings under this Act. In Sarawak, the individual measurements will be carried out and this was followed by the release of document of title in the appropriate period which is provided under Section 18 of the Land Code. Section 18 of the Sarawak Land Code 1958 Chapter 81, also stated that

where the native has occupied and used any area of un-alienated state land in accordance with rights acquired by customary tenure amounting to ownership of the land for residential or agricultural purposes, a grant is issued to the native in perpetuity of that area of land free of premium rent and other charges.

Item	Melaka	Sarawak
Cadastral survey	Yes	Yes
Cadastral map	Yes	Yes
Boundary	Yes	Yes

Table 4.3: Comparisons of Demarcations

4.5 Malaysian LADM Country Profile

This Malaysian LADM Country Profile is referring to the Malaysian Domain Model which is done by Nur Amalina Zulkifli, Alias Abdul Rahman and Tan Liat Choon. The Malaysian country profile is based on inheriting from LADM classes. ‘MY_’ is the prefix for the Malaysian country profile, covering both the spatial and administrative (legal) data modelling. Figures 4.1 and 4.2 give an overview of the developed model. The administrative part is very close to the LADM standard and the spatial part contains various refinements. The model and design decisions on which the model is based will be elaborated on in this section. The current cadastral system in Malaysia is still not able to answer several 3D situations. Although the 2D cadastre still plays an important role in Malaysian land administration, particular needs for the registration related to 3D cadastre based on LADM specifications need to be investigated further. Therefore the proposed model includes 3D geometric descriptions. Annex A contains the detailed version of the UML class diagrams, note that in some cases the inherited attributes are shown; e.g. for MY_Spatial Unit, MY_Point, MY_Party, MY_RRR, etc. To illustrate the inheritance from the LADM classes in these cases (in Annex A and in the overview class diagrams in Figures 4.1

and 4.2), the MY_ classes have either in upper right corner the corresponding LA_ class name in italics or have the explicit inheritance arrow shown in the diagram. All classes in Malaysian model are derived directly or indirectly (via the inheritance hierarchy) from LADM classes.

In the proposed country profile, spatial units can be 2D or 3D. Traditionally, lots are 2D, but subsurface lots do already exist with 3D description with volumetric descriptions, but no 3D topology. The model has introduced an abstract class MY_Generic Lot holding the attributes of a lot and this class has two specializations MY_Lot 2D and MY_Lot 3D, with their own attributes and structure. Currently MY_Lot 2D is based on 2D topology with references to shared boundaries (MY_Boundary Face String). In 3D topology is not used: not for lots (MY_Lot3D), nor for strata objects. In the model one strata object type remains to be represented in 2D, MY_LandParcel (with building no more than 4 stories). The other strata objects are all proposed to be 3D and therefore inherit from an abstract class MY_Shared3DInfo, with strata specializations (and mutual aggregation relationship): MY_Building Unit, MY_Parcel Unit, MY_Accessories Unit, MY_Common Property Unit and MY_Limited Common Property Unit. As there can be several Limited Common Property's in one Common Property, this is modeled as a part-of relationship to MY_Common Property (the aggregation class). In the class diagram, Figure 4.1, the blue classes refer to part of strata objects for better readability of the model.

Note that there are various abstract classes in the Malaysian country profile indicated in Italics: MY_Spatial Unit, MY_Shared 3D Info, MY_Generic Lot. These classes are only supporting the modeling, representing shared attributes and structures, and will not get any instances (and therefore no corresponding table in the database implementation). For MY_Shared3DInfo there is a geometry attribute (of type GM_Solid). Normally the 3D geometry in LADM is represented in LA_Boundary Face, but given the fact that no 3D topology is used there is 1-to-1 association with the spatial unit (one of the specializations of MY_Shared 3D Info).

So, it could be argued that the proposed country profile is ISO conforming, despite that absence of the class LA_Boundary Face.

One of the important foundations of LADM is the fact that all information in the system should originate from source documents and that the association to the source document is explicitly included. In case of spatial source documents (usually certified plans) there are links with spatial unit and point tables: MY_Spatial Source has association with MY_Spatial Unit and MY_Point. In case of administrative source documents (usually titles) there are associations with right, restriction (included mortgage) and responsibility (RRR) and basic administrative unit. MY_Administrative Source associates with MY_RRR and MY_BAUnit. The LADM Malaysian country profile uses suID for spatial unit and sID for spatial and administrative source. Basically, suID in Malaysian country profile is based on Unique Parcel Identifier (UPI). sID for spatial source is certified plan number and sID for administrative source is title number. A note has been added in the country profile to indicate this.

In Malaysia, there is normally 1 to 1 relationship between BAUnit and spatial unit. However, today in Malaysia there are some cases where one BAUnit (with same RRRs attached) has multiple Spatial Units: a combination of farmland with residential house (Group Settlement Act). Also, some status values of MY_Lot (e.g. 10, which indicates charting stage) relate to lots that do not yet have RRRs attached, to make this possible, the multiplicity of the association between spatial unit and BAUnit is 0..1 (optional) at BAUnit side. In the future, the Malaysian land administration system can consider more grouping of spatial units with same RRRs attached via a single BAUnit.

To make the model comprehensive and future proof, a wide range of spatial units is supported including legal spaces for utilities (3D), customary areas, and reserved land (forest, wildlife areas). It should be noted that reserved land (forest, wildlife), are associated with own RRRs, normally have no overlap, but in some

cases overlap can happen depending on state and type. The spatial description of reserved land is by text or sketches, but they may also be surveyed (or a combination with the above). The various types of spatial units are organized in levels. In this model we use MY_Level class to organize the various types of spatial units. For MY_Level, there is a type attribute which describe level type of the spatial unit. The type of spatial unit will include customary, lots (mixed land and road), building (parts, strata) and utilities. The code list for this attribute can refer to MY_Level Content Type. Basically, MY_Level is a collection of spatial units with a geometric or thematic coherence. The following levels are proposed: level 0 for customary, level 1 for reserved land, level 2 for 2D lot, level 3 for 3D lot, level 4 strata, and level 5 for utility. In the involved classes a constraint has been added (third box in class diagram) to make this more explicit. For an example; MY_Customary has a constraint: MY_Level.name = 'level 0'.

In case of some special types of lots there may be no certified plan; related to 'Qualified title' (only temporary boundary from sketch/demarcation by settlement officer/ pre-computation plan). Also strata with provisional block for building or land parcels for phased development are supported by marking them as provisional via additional attribute. In one scheme for building (3D), it also have provisional block. Based on Strata Titles Act 1985 (section 4), provisional means: a) in relation to a proposed strata plan, a block in respect of a building proposed to be, or in the course of being, erected, for which a separate provisional strata title is applied for; b) in relation to an approved strata plan, such a block shown therein, for which a provisional strata title is to be registered; c) in relation to a book of strata register, such a block shown therein, for which a provisional strata title has been registered.

To illustrate the inheritance from the LADM classes, some of the MY_ classes have in upper right corner the LA_ class name in italics; e.g. MY_Spatial Unit is an inherited class from *LA_Spatial Unit* (from the standard - use LA_ as prefix). Meanwhile, *LA_Spatial Unit* is a subclass of Versioned Object and inherited all the Versioned Object attributes. Class Versioned Object is introduced in the LADM to manage and maintain historical data in the database. The classes with do

not have an upper right corner and LA class name in italics are not (directly) inherited from a standard LA_ class. There are some attributes, which are repeated after inhering them from LA_ class. The reason for this is that they have different multiplicity from LA_ class. For an example, LA_Area Value in MY_Lot3D class has 0 multiplicity because this class has no value for area and in MY_Lot2D the multiplicity of this attribute is [1..*]: indicating the presence of one or more area values. The original LA_ s class (LA_Spatial Unit) for volume attribute has zero and more [0..*] multiplicity. Note, example types of LA_Area Value are: official Area, non-official Area, calculated Area, surveyed Area.

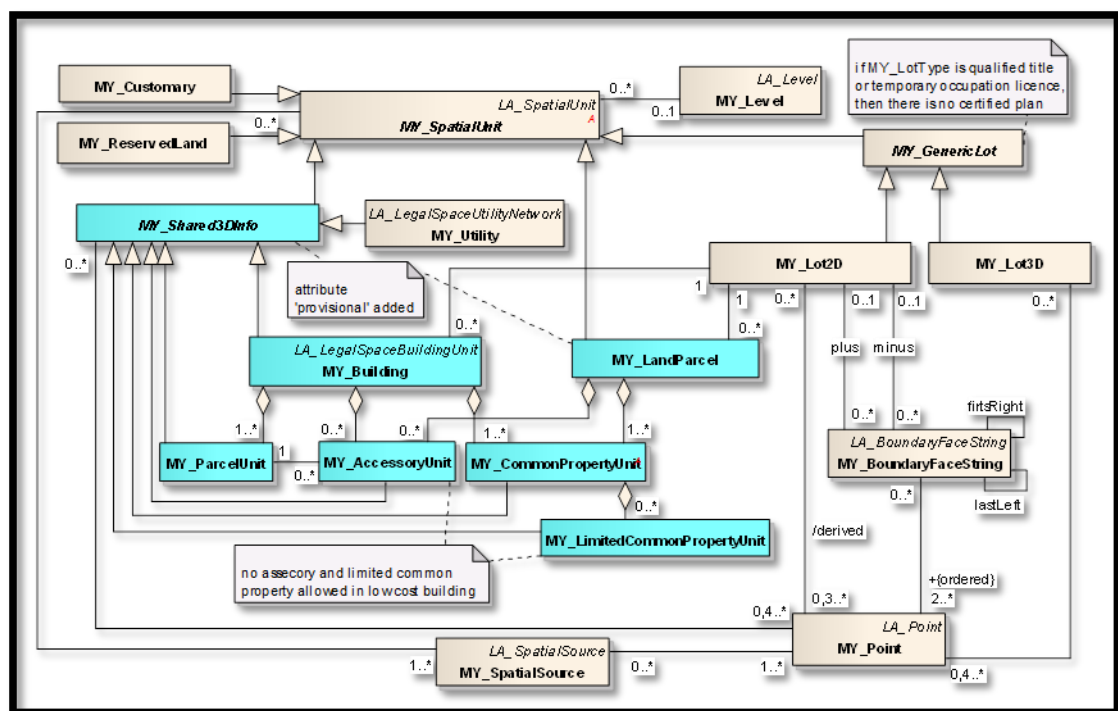


Figure 4.1: Overview Spatial Part Malaysian LADM Country Profile (blue is used for strata related classes)

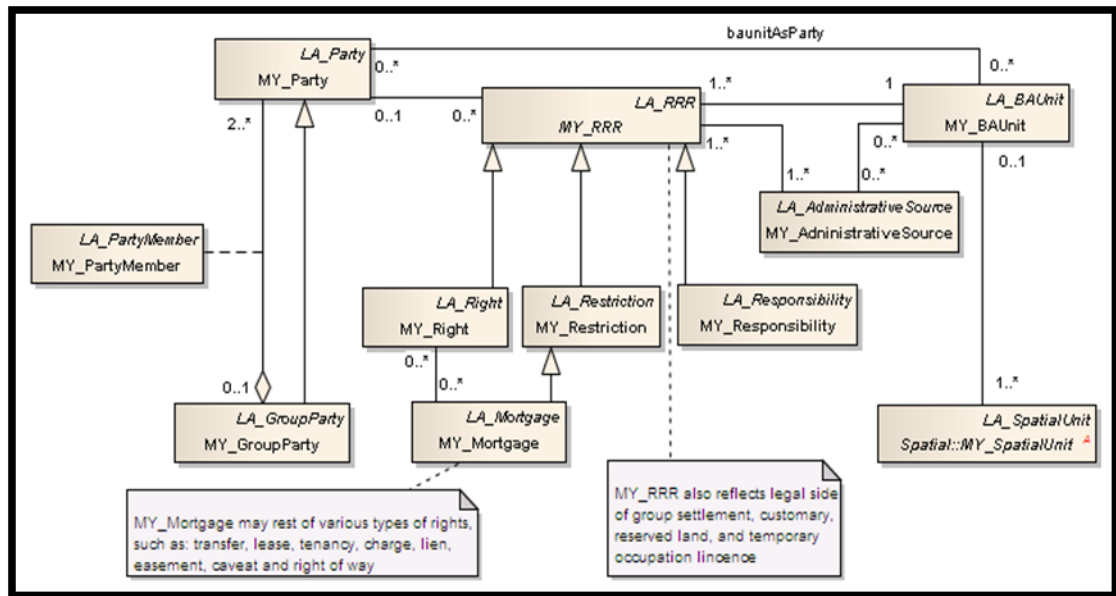


Figure 4.2: Overview administrative (legal) part Malaysian LADM country profile

4.6 Development of Customary Right Domain Model (Spatial and Non-spatial)

In the proposed Malaysian Country Profile, MY_Customary is made as an individual class and connected to MY_Spatial Unit. As shown in the above figure, the MY_Customary is being connected to MY_Boundary Face String. This is to show that the customary lands are being surveyed as stated in both Melaka and Sarawak Land laws. Customary land is considered as a certified land parcel. This is the spatial part of the customary rights.

The non-spatial part of the customary rights is involving the rights, restriction, responsibility and mortgage. Party is also involved as it is to show that there are some agencies, land owners or government who are involved in the land ownership of the customary lands. The MY_RRR is connected to the MY_Customary to show that there are rights, restrictions and responsibilities

As shown in Figure 4.4 which is the detailed non-spatial and spatial domain model, the MY_Customary is being connected together with both spatial and non-spatial domain model. The spatial domain model is more towards to survey field of the customary rights such as MY_Point, MY_Spatial Source and MY_Boundary Face String whereas the non-spatial domain model is more towards to the non-survey field of the customary rights that is more towards to the legislation part of the customary rights.

From the comparisons that had made as mentioned in chapter 4.4, the comparisons proved that customary rights involved both spatial and non-spatial part. It is very clear that from this model that the supports both non-spatial and spatial part of the customary rights.

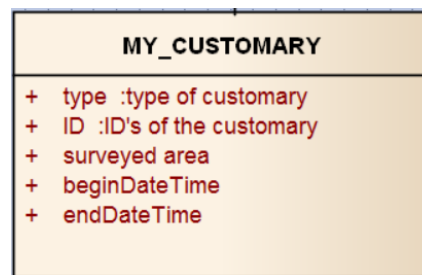


Figure 4.5: MY_Customary

By referring to the figure 4.5, MY_Customary consists of type of customary. This is vital as customary rights that are being practiced in both Melaka and Sarawak are different. Therefore, it is important to take into account the type of customary that is being referred to. From the comparisons, Melaka is using Melaka Customary Land and Malacca Customary Land Register is used for the customary land register title. As for Sarawak, the Native Customary Land is used to refer to the customary lands in Sarawak. This proves that the interpretations of each state are different.

In the MY_Customary, there is the need to include the land owner of the customary land who has the rights over the land and has registered in the registration.

The land owner of the land is represented by the attribute of ID of the customary. Melaka is using the certified persons or Malays to refer the land owner of the customary land while Sarawak is using natives as the person who has the right over the native land. Therefore, the ID of the customary is important as different interpretations are being used.

The surveyed area attribute is needed to be included in the MY_Customary package as the land law that is being enforced in both of the states stated that there is a need to final certain boundaries for customary land. According to section 98 of the National Land Code (Penang & Malacca Titles) 1963 (Act 518), there is a provision for the finality of certain boundaries for customary land and the boundary of any holding is deemed to have been finally ascertained under the Ordinance. For Sarawak, where the native has occupied and used any area of un-alienated state land in accordance with rights acquired by customary tenure amounting to ownership of the land for residential/ agricultural purposes, a grant is issued to the native in perpetuity of that area of land free of premium rent and other charges as stated in Section 18 of the Sarawak Land Code 1958.

The next attributes are the begin data time and end date time. This is important and needed to be stated in the attribute as there is some period of time for the ownership of the customary land.

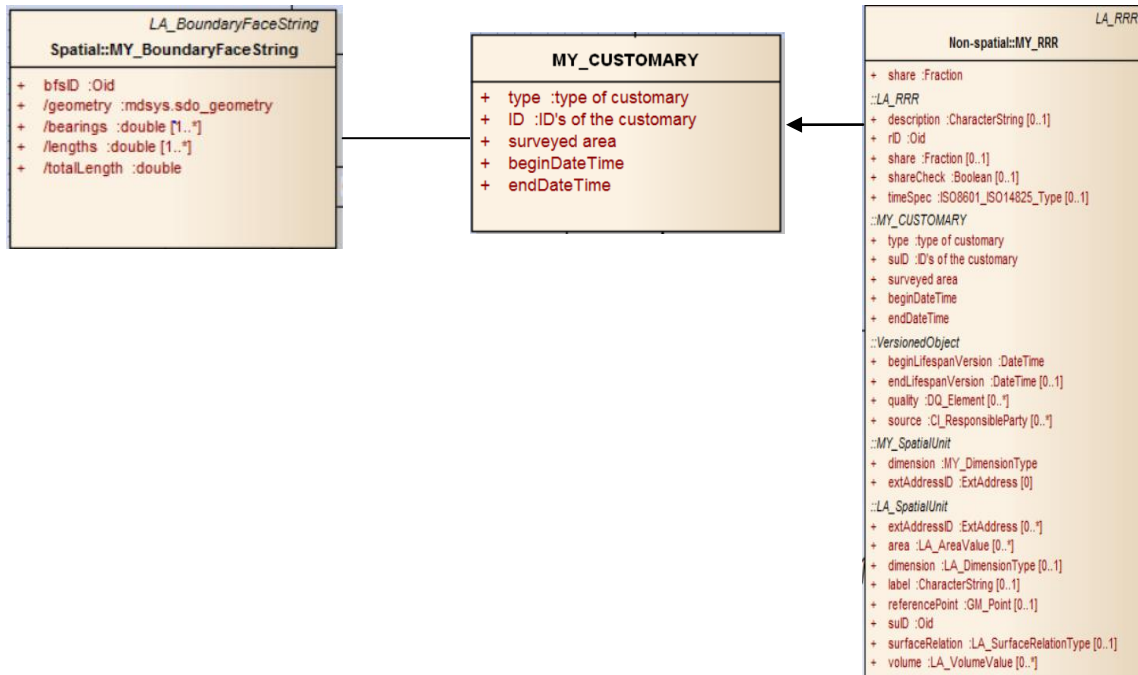


Figure 4.6: Relationship between MY_Customary, MY-Boundary Face Setting and Non-Spatial_RRR

As shown in figure 4.6, it shows the connection between the spatial and non-spatial aspects being connected to the MY_Customary. As for the multiplicity for MY_Boundary Face Setting and MY_Customary is 0..* as the customary land maybe has boundaries or no boundaries. 0 represents null or nothing and * represents infinite number.

The non-spatial aspects are being generalized to MY_Customary as the MY_Customary involved the RRR which are Rights, Responsibilities and Restrictions. The administrative part of the customary is also included in the non-spatial part of the domain model. The RRR and administrative part are generalized to the MY_Customary which means the MY_Customary inherited the attributes of the non-spatial aspects. MY_Customary should inherit all the administration, right, restriction and responsibility regarding the customary rights.

CHAPTER 5

CONCLUSIONS AND RECOMMENDATIONS

5.0 Conclusion and Recommendations

The results of comparisons between the customary rights of Melaka and Sarawak have many things in common as referred to chapter 4. The differences between the two are the interpretations used for customary rights, the people who can have ownership over customary land and the way of the customary rights being implemented in each of the states mentioned. Even though the land laws used in both Melaka and Sarawak are different, their objectives are still the same that is to maintain the rights over the customary land. In Melaka, the land laws of customary rights is still involving National Land Code 1965 (Act 56) but in Sarawak, the land laws used are not involving the national land code. The first objective of the research has been achieved that is to compare the differences of the customary rights between Melaka and Sarawak.

The proposed Malaysian customary rights domain model is including both of the non-spatial and spatial part as the customary rights involving both spatial and administrative elements. Customary rights should not be neglected from the land administration system as customary land is involved in the development of land. By

referring to the customary domain model, it is involving both non-spatial and spatial. This shows that customary right is a vital part of the land administration system. In both of the land laws of Melaka and Sarawak, the customary land needs to be surveyed and demarcated in order to validate the customary land ownership. From this domain model, the conceptual semantic of the customary rights is shown clearly. The second objective of the research has been achieved that is to propose a suitable Land Administration Domain Model for spatial and non-spatial customary right in Malaysia (Melaka and Sarawak).

The land policy in Malaysia is the result of interplay of land related instrument which more than adequately administer and control land use and development for compliance with national development objectives. The environment for the implementation of land policy and land use planning strategies is controlled by regulations. A good land administration supports sustainable development. It will guarantee ownership and security of tenure, facilitate the management of State-owned land and facilitate customary land management.

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SCHEDULE 6

(Section 108)

PEOPLE OR ORGANIZATION WHERE THE LAND IS SUBJECT TO PART VIII
ALLOWED TO BE MORTGAGED

1. Minister of Finance
2. Federal Lands Commissioner.
3. Majlis Amanah Rakyat
4. The Housing Trust
5. Bank Bumiputra Malaysia Berhad
6. Bank Pembangunan Malaysia Berhad
7. Lembaga Padi dan Beras Negara
8. Bumiputra Merchant Bankers Berhad
9. Malayan Banking Berhad
10. Bank Pertanian
11. Bank Kerjasama Rakyat Malaysia
- A 597/84 12. Petroleum Nasional Berhad
13. Southern Bank Berhad
14. Public Bank Berhad
15. Malaysia Borneo Finance Corporation (M) Berhad
16. Sabah Bank Berhad
17. The Co-operative Central Bank Ltd.,
18. Lembaga Pelabuhan Kelang
19. Koperasi Guru-Guru Melayu Melaka Berhad
20. Petronas Dagangan Sdn. Bhd.,
21. Yayasan Melaka
22. Perwira Habib Bank
23. Perbadanan Kemajuan Negeri Melaka.
24. Lembaga Letrik Negara
25. Perbadanan Pembangunan Bandar
26. Lembaga Pemulihan dan Penyatuan Tanah Negara.
27. Bank Islam
28. Setiausaha Kerajaan Melaka.

29. Pembangunan Pertanian Melaka Sdn. Bhd.,
30. Rubber Industry Smallholders Development Authority (RISDA)
31. Chung Khiaw Bank
32. United Malayan Banking Corporation Bhd.,
33. United Asian Bank
34. The Malayan Finance Corporation Bhd. Ltd.,
35. Malayan United Finance
36. Public Finance Bhd.,
37. Malaysia Building Society Bhd.,
38. Kewangan Bumiputra Berhad
39. Malaysia National Insurance Sdn. Bhd.,
- MPU.21/81 40. Talasco Insurance Sdn. Bhd.,
41. Majlis Perbandaran Melaka Tengah
42. Bank Oriental
43. Kerajaan Malaysia
44. Majlis Agama Islam Melaka.
45. Permodalan Nasional Berhad
46. Perbadanan Industri Berat Malaysia Berhad
47. Perbadanan Bank Oversea Chinese Berhad
48. Bank Kwong Yik Berhad
- MPU. 9/85 49. Koperasi Polis DiRaja (Malaysia) Berhad
50. Kewangan Usaha Bersatu Berhad
51. Lee Wah Bank
- MPU.4/86 22.1.86 52. Lembaga Urusan dan Tabung Haji
53. Amanah International Finance Sdn. Bhd.,
54. Malaysian International Finance Sdn. Bhd.,
- MPU 7/86 16.4.86 55. Malaysian French Bank Berhad
56. Arab Malaysian Merchant Bank Berhad
57. Arab Malaysian Finance Berhad
- MPU.9/86 20.8.86 58. Malaysia Credit Finance Berhad
- MPU.10 20.11.86 59. Koperasi Wanita Melaka Berhad
- MPU.15 25.12.86 60. The Pacific Bank Berhad
61. Koperasi Pekerja Pekerja Melayu Melaka Berhad

62. Esso Malaysia Berhad
63. Kumpulan Guthrie Sendirian Berhad
64. State Secretary Selangor (Incorporation)
- MPU.5 2.2.87 65. Development & Commercial Bank Berhad
- MPU.5 2.2.87 66. Visia Finance Berhad
- MPU.10 27.8.87 67. Komplek Kewangan Malaysia Berhad
- MPU.145.11.87 68. Lembaga Kumpulan Wang Simpanan Pekerja
- MPU.14 5.11.87 69. UMBC Finance Berhad
- MPU.3 (Tambahan 2) 3.3.87 70. Cagamas Berhad
- MPU.14 71. Petmal Sendirian Berhad.
72. Bank Utama (Malaysia) Berhad
73. Utusan Melayu (Malaysia) Berhad
- MPU 15 (Tambahan 7) 21.7.87 74. Cempaka Finance Berhad
75. Perbadanan Kemajuan Getah Malaysia Berhad (MARDEC)
76. Syarikat Telekom Malaysia Berhad
77. Shell Malaysia Trading Sendirian Berhad
- MPU 16 (Tambahan 8) 1.9.88 78. KCB Finance Berhad
79. D & D Finance Berhad
80. Affin Finance Berhad
- MPU 37 (Tambahan 15) 9.11.89 81. Malaysian Industrial Development Finance Berhad
- MPU 8 Jil 34 No.5 (Tambahan 3) 82. MUI Bank Berhad
- MPU 1Jil. 35 No.6 (Tambahan 3) 83. MBF Finance Berhad
84. Caltex Oil Malaysia Berhad.
85. Bank Simpanan Malaysia
86. Tenaga Nasional Berhad
87. Telekom Malaysia Berhad
88. Bank of Commerce (M) Berhad
89. Kewangan Industrial Berhad
90. Mayban Finance Berhad
91. Oriental Bank Berhad
92. Mobil Oil Malaysia Sdn. Bhd.,
93. Perbadanan Kemajuan Tanah Adat Melaka.
94. The Hong Kong & Shanghai Banking Corporation Limited

95. Lembaga Pengelola Dewan Bahasa dan Pustaka
MPU 18/93
96. Oriental Finance Berhad
MPU 3/94
97. BBMB Kewangan Berhad
MPU 3/94
98. Petronas Dagangan Berhad
MPU 7/94
99. The Malaysian Co-operative Insurance Society Limited
MPU 7/94
100. Hongkong Bank Malaysia Berhad
MPU 7/94
101. Chung Khiaw Bank (Malaysia) Berhad
MPU 11/94
102. Koperasi Muslimin Malaysia Berhad
MPU 11/94
103. Pertubuhan Keselamatan Sosial
MPU 15/94
104. OCBC Bank Malaysia Berhad
MPU 24/94
105. United Merchant Finance Berhad
MPU 24/94
106. Bank Islam Malaysia Berhad
MPU 1/95
107. Arab Malaysian Eagle Assurance Berhad
MPU 1/95
108. Persatuan Nelayan Kawasan Melaka.
MPU 1/95
109. United Overseas Bank (Malaysia) Berhad
MPU 2/95
110. Hong Leong Finance Berhad
MPU 2/95
111. Perwira Affin Bank Berhad
MPU 2/95
112. EON Finance Berhad
MPU 5/95
113. BSN Commercial Bank Malaysia Berhad
MPU 8/95
114. Arab Malaysia Sendirian Berhad.
MPU 3/96
115. Kewangan Bersatu Berhad
MPU 3/96
116. Perbadanan Usahawan Nasional Berhad
MPU 3/96
117. DCB Bank Berhad
MPU 5/96
118. Amanah Merchant Bank Berhad
MPU.5/96
119. Kwong Yik Finance Berhad
MPU 1/97
120. Allied Bank (Malaysia) Berhad
MPU 1/97
121. Multi-Purpose Finance Berhad
MPU 1/97
122. Arab Malaysian Bank Berhad
MPU 1/97
123. EON Bank Berhad
MPU 8/97
124. Melaka Chief Minister
MPU 8/97
125. Koperasi Majlis Agama Islam Melaka
MPU 8/97
126. Pembangunan Pembinaan Melaka Sdn. Bhd.,
MPU 8/97
127. Overseas Union Bank (Malaysia) Berhad
MPU 8/97
128. Sime Bank Berhad
MPU 8/97

- MPU 8/97 129. BSN Finance Berhad
- MPU 8/97 130. Perwira Affin Merchant Bank Berhad
- MPU 8/97 131. Phileo Allied Bank (Malaysia) Berhad
- MPU 1/98 132. RHB Finance Berhad
- MPU 1/98 133. Bank Pertanian Malaysia
- MPU 1/98 134. Bank Kerjasama Rakyat Malaysia Berhad
- MPU 1/98 135. Syarikat Takaful Malaysia Berhad
- MPU 2/98 136. BP Malaysia Sdn. Bhd.
- MPU 5/98 137. Setiausaha Kerajaan Johor
- MPU 5/98 138. Hong Leong Bank Berhad
- MPU 5/98 139. Amanah Finance Malaysia Berhad
- MPU 5/98 140. Sime Finance Berhad
- MPU 5/98 141. RHB Bank Berhad
- MPU 6/98 142. Koperasi Majlis Agama Islam Melaka Berhad
- MPU 10/98 143. Pembiayaan Perumahan Nasional Sdn. Bhd. (PPN)
- MPU 1/99 144. Credit Corporation (Malaysia) Berhad
- MPU 1/99 145. Perdana Finance Berhad
- MPU 1/99 146. Pengurusan Danaharta Nasional Berhad
- MPU 19/99 147. BBMB Securities Sdn. Bhd
- MPU 19/99 148. HSBC Bank Malaysia Berhad
- MPU 19/99 149. Lembaga Tabung Haji
- MPU 19/99 150. Danaharta Managers Sdn. Bhd.
- MPU 19/99 151. Danaharta Urus Sdn. Bhd.

SCHEDULE 7

(Section 108 and 109B)

PERSONS OR ORGANIZATIONS WHOSE LAND IS SUBJECT TO PART VIII
ALLOWED TO BE TRANSFERRED OR DISPOSED

1. Yayasan Melaka.
2. Setiausaha Kerajaan Melaka
3. Perbadanan Pembangunan Pertanian Melaka Sdn. Bhd.,
4. Pembangunan Pertanian Melaka Sdn. Bhd.,
5. Perbadanan Kemajuan Negeri Melaka.
6. Majlis Ugama Islam Melaka
7. Majlis Amanah Rakyat
8. Federal Lands Commissions
9. Koperasi Wanita Melaka Berhad
10. Komplek Kewangan Malaysia Berhad
- MPU.38 11. PETRONAS Penapisan (Melaka) Sdn. Bhd.,
12. PETMAL Sendirian Berhad
- MPU.7 13. PETRONAS Dagangan Sdn. Berhad
14. Koperasi Pekerja Pekerja Melayu Melaka Berhad
15. Koperasi Homeopathy Melaka Berhad.
- MPU. 2 16. Edaran Otomobil Nasional Berhad
- MPU.21 30/7/92 17. Bank Pertanian Malaysia
18. Shapadu Kontena Sdn. Bhd.,
- MPU. 1 4/2/93 19. Lembaga Kebajikan Perempuan Islam Perhubungan Negeri Melaka.
- MPU 8. 22/7/93 20. Perbadanan Kemajuan Tanah Adat Melaka.
- MPU. 14 21. Syarikat Kerjasama Serbaguna Sungai Rambai Berhad Melaka
- MPU. 2/94 22. Petronas Dagangan Berhad.
- MPU 25/94 12.10.94 23. Syarikat Kerjasama Serbaguna Guru-Guru Ugama Negeri Melaka Berhad.
- MPU 1/95 24. Persatuan Nelayan Kawasan Melaka
- MPU 8/95 25. Bank Islam Malaysia Berhad
26. Koperasi Polis Di Raja Malaysia Berhad

27. Koperasi Pekebun Kecil Negeri Melaka
MPU 2/97 28. Pertubuhan Peladang Kawasan Masjid Tanah
MPU 9/97 29. Ketua Menteri Melaka
30. Pertubuhan Peladang Kawasan Melaka Tengah
31. Koperasi Majlis Agama Islam Melaka
32. Pembangunan Pembinaan Melaka Sdn. Bhd.,
MPU 4/98 33. Tenaga Nasional Berhad
MPU 7/98 34. Koperasi Majlis Agama Islam Melaka Berhad
MPU 2/99 35. Pengurusan Danaharta Nasional Berhad
MPU 6/99 36. Perbadanan Air Melaka.
MPU 19/99 37. Danaharta Managers Sdn. Bhd.
MPU 19/99 38. Danaharta Urus Sdn. Bhd.

Excerpts from para 3 and 4 from Schedule 5 of the National Land Code

FIFTH SCHEDULE

(Section 211)

OFFICERS OR OTHER PERSONS TO ATTEST EXECUTIONS OF INSTRUMENTS

EFFECTING DEALINGS UNDER ACT

3. Subject to paragraph 4, every execution by a natural person of any instrument effecting any dealing under this Act in respect of any of the following lands shall be attested by an

Administrator:

(1) a Malay holding under the Malay Reservations Enactment of the Federated Malay States, the Malay Reservations Enactment of Johore, or the Malay Reservations Enactment of Terengganu;

(2) reservation land held by a Malay under Enactment No.63 (Malay Reservations) of Kedah, the Malay Reservations Enactment of Kelantan, or the Malay Reservations Enactment of Perlis;

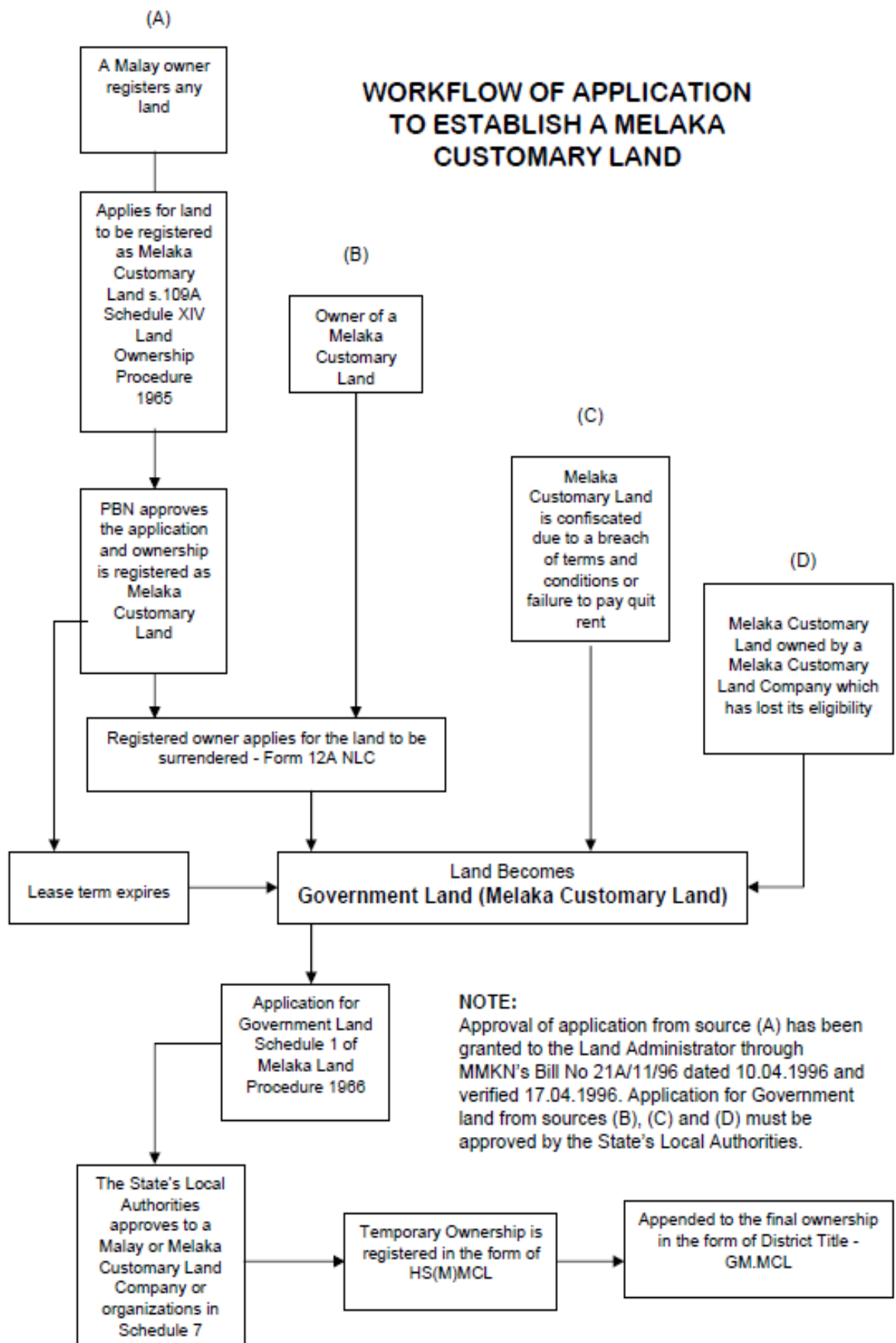
(3) reservation land held by a Siamese under Enactment No.63 (Malay Reservations) of Kedah, or the Malay Reservations Enactment of Perlis;

(4) Land that is subject to Part VIII of the National Land Code (Penang and Malacca Titles) Act 1963.

4. The requirement for attestation by an Administrator under paragraph 3 shall not be applicable to :

(1) any instrument of charge in respect of any land referred to in that paragraph executed by a person under a power of attorney on behalf of a body corporate or a company provided that such body corporate or company is allowed to be a chargee under the appropriate Malay Reservations Enactment;

(2) any instrument of discharge of charge.



Annex A

Based on spatial and non-spatial data modelling above, several classes have code list. In Malaysia, standard codes for features and attribute code (MS 1759: 2004) are used. Malaysian standard codes basically cover the spatial part and rarely cover non-spatial part likes Right, Restriction, and Responsibility type.

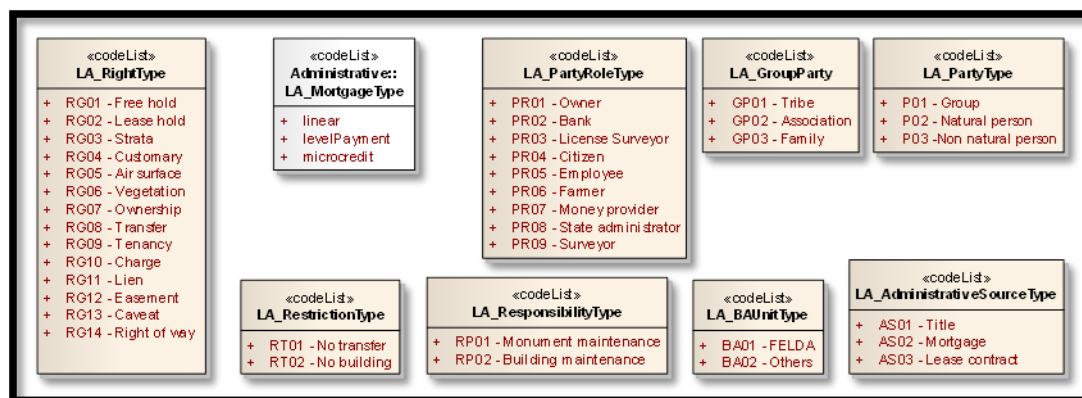


Figure 1: Code list with Malaysian values for non-spatial package (party and administrative package)

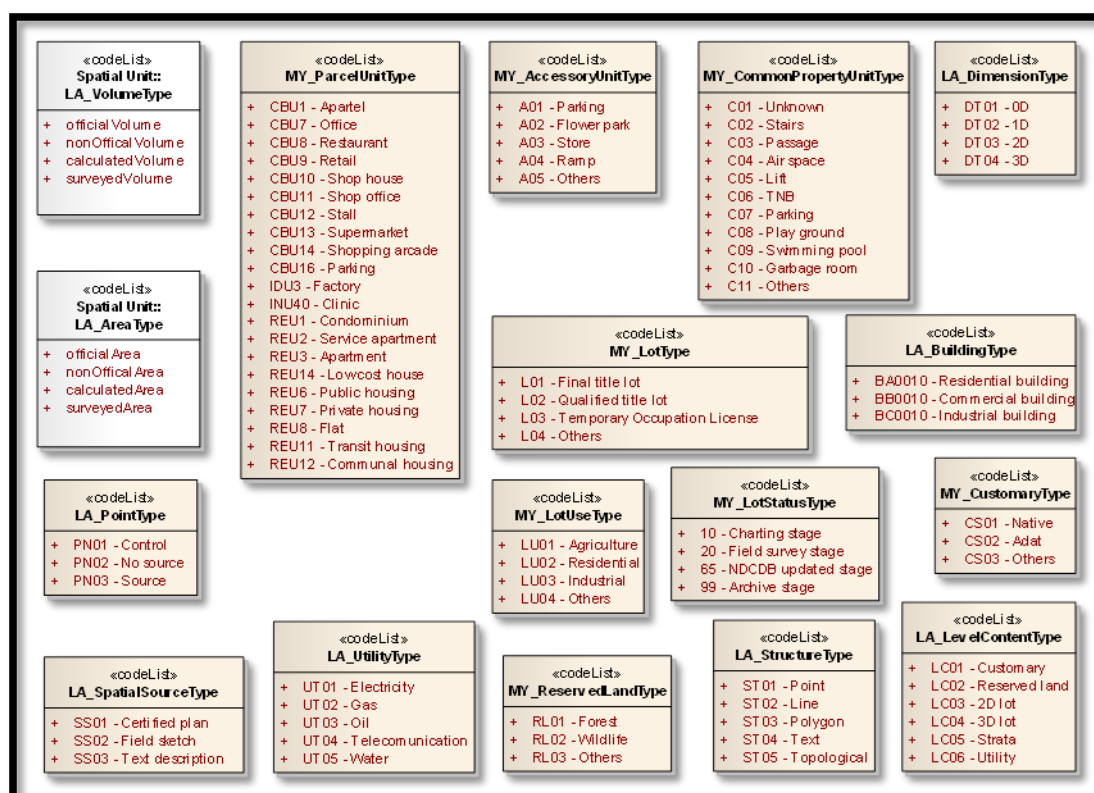


Figure 2: Code list with Malaysian values for spatial package (white: content equal to LADM)

In most cases, Malaysian values are proposed for the well-known LADM code lists. In future there may be a global (ISO or FIG or OGC) organization, maintaining code

list and their values. In addition some new Malaysian specific code lists are proposed; e.g. MY_Lot Type, also with proposed code list values.